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MANAGEMENT GAMES AS AN ACADEMIC AND MILITARY INSTRUCTIONAL DEVICE

By

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INTRODUCTION

Throughout the ages man has expressed a desire to prepare for the future. In an effort to achieve this end he has attempted to imitate future happenings, assuming the appearance without creating reality. Simulation has served as a vehicle for familiarization with the expected and unexpected, afforded an opportunity to rehearse actions that should or would be employed should similar situations occur in reality.

With the sophisticated simulations of the twentieth century one might have a tendency to associate the creation of this practice with modern man; however, simulation is not an invention of this age. Yes, the advancements and refinements of the past fifteen years have produced simulations of great utility, and in some instances systems so complex that their execution is impossible without the employment of computers. However, simulation is a product of prehistoric man, one of his contributions to the society of today. The first act of simulation was intended to achieve the same goals as those of today namely training, experience, and discovery of the unknown.

CHAPTER I

DEVELOPMENT OF GAMING SIMULATIONS

"Practice makes perfect," is a well known adage, but for some professions opportunities to perfect their trade under conditions of reality are rare. Rare, because of an infrequent demand for the services rendered by these occupations. An outstanding example of such a profession is the military, one requiring extensive training to be capable of meeting the challenge of war. Because of the scarcity of wars and the undesirability of preparing under actual combat conditions, the military over the years has developed various training devices involving the simulation of warfare. Simulations in the form of maneuvers and war games have proven to be extremely useful and beneficial training methods.

Even though the use of maneuvers has been restricted to the military, in later years the military's gaming simulations, the war game, has been adapted to civilian use; the management game or business simulation has been created by educators and industry. Management games have become an important device for education, training and research. During the past ten years management games ranging from the simple manually executed to complex computerized simulations have been created.

I. HISTORICAL DEVELOPMENT OF GAMING SIMULATIONS

The historical development of gaming simulations might be thought of as analogous to a tree. The ground from which the tree's roots originate symbolizing games based on the game of chess, the trunk suggestive of the war games created prior to 1811. The tree's branches portraying war games of a later vintage, and finally,

the tree's foilage typifying the modern war and management simulations.

Origin of Games and the Game of Chess

To establish an exact date for the invention of the first game is impossible--games were played before the establishment of historical records. Most games have associated rules that are traditional in nature and although new games are created from year to year, in many instances they are variants of game types older than available records. In Homer's Iliad war and religion were closely associated with games. Even in ancient Greece the play of games is attested by the various athletic contests comprising the Olympic Games of that day.[1]

Chess was one of the earliest games to employ pieces for play which represented the military forces of the time. Researchers are in disagreement as to the exact origin of chess. Some maintain that the game was not developed until six hundred years after the start of the Christian Era. Some historians even hold to the belief that the origin of the game cannot be fixed, since its conception resulted from the play of even older games.[2] Most authorities do agree that the roots of chess probably stem from the Hindu game of "chaturaga" played in ancient India and from similar games played in Iraq as early as 3,000 B.C.[3]

Development of the War Game

In the play of chess the development of strategy and tactical situations are designed to ultimately result in the capture of an opponent's king. Founded on such play, the first resemblance of a war game, "King's Game," was developed in 1644 by Christopher Weikhmann. The play of "King's Game" was similar to that of chess with the exception that the pieces used in its play were identifiable with the armed forces of that day. Because of these features "King's Game" became known as "military" or "war chess." Of his game, Weikhmann stated, "...it was not designed

to serve merely as a pastime but that it would furnish anyone who studied it properly a compendium of the most useful military and political principles."[7]

With the passage of time certain changes were made to "King's Game" or "war chess." Three of the most important were:

1. A single piece used in the game's play represented groups rather than an individual or unit.
2. Terrain features were depicted.
3. A game director was assigned to supervise play.

Exactly when these changes occurred and to whom they are attributable cannot be determined; however, all were included in a game invented by Helwig, the Master of Pages at the court of the Duke of Brunswick in 1780. Helwig's game was designed to arouse the interest of young noblemen in military problems and to teach them certain aspects of military science.[8]

Helwig's game was an immediate success and its play spread to France, Austria, and Italy. As had been the case with "King's Game," Helwig's game was quickly imitated and numerous variations of it soon appeared. One variation that attracted considerable attention was devised in 1798, by George Vinturinus, a writer on the science of war. Vinturinus' game, primarily designed for play at military schools, was the first to break away from the chess board and make use of maps. Even with this innovation it was still classified as an extention of the play of "war chess" and became known as the "New Kriegsspiel."[9,10]

From the original "King's Game" to its most refined offspring "New Kriegsspiel," all variations had certain common characteristics that detracted from their value as instructional devices.[11] As stated by Francis J. McHugh, operations research analyst at the U.S. Naval War College, "War chess resembled rather than simulated

warfare. In some ways it might be considered as having the same relationship to later war games as the game of Monopoly bears to current business games."[12] Despite the shortcoming of the early so called "war games," many considered them to be beneficial. Sayre made this comment regarding "war chess", "...probably illustrated the science of war, as taught at that time, better than it could have been represented on a map or on the ground."[13]

The first complete break away from the traditional "war chess" method of play was a game invented by Von Reisswitz in 1811. This game in its first form consisted of a battlefield set to scale and modeled in sand. In the play of the game troops represented by blocks of wood could be moved anywhere within the bounds of the playing area. In its final form the game or field of play was molded of plaster, having woods, streams, and buildings painted in color.[14] Modifications to this game were made by Von Reisswitz's son in 1824, who transferred his father's game to maps. This innovation developed the game into the Prussian Guard Artillery, has been heralded by many as the true war game; however, some reserve this credit for the game created by the father.[15]

Since the modifications incorporated in 1824, the war game has undergone changes occasioned by advances in weaponry, but the basic method of play and organization of the war game has remained essentially the same. Shortly after World War II the electronic computer was incorporated in the play of some war games. The introduction of the computer and innovations since 1950, have begotten techniques and methods worthwhile in the pursuit of military research and planning. These later modifications have expanded the utility of the war game from its use fundamentally for training to employment as a prognostic instrument.

Origin and Development of the Management Game

It is the philosophy of one author of Management Games that "...it is difficult to assign credit and dates to any person or group (for the creation of the first management game) since some avid historian is sure to uncover an earlier version,"[17] this same philosophy shall be adopted in this text. Without the mention of any specific names or dates, the first indication of interest in the development of business simulations appeared during the early 1950's. It was during this period that commercial enterprise and educators began tailoring to civilian use certain operational research techniques used by the military. Among the first of these to be utilized was the war game; management games were created to reflect the dynamic behavior of business, paralleling the simulation of warfare by the war game.

Two of the earlier games, if not the first two management games, were developed in 1957. In that year a manually scored and executed game was completed by G. R. Andlinger, and in May 1957, the first play of the American Management Association's computerized "Top Management Decision Simulation" was accomplished.[18] These inspired numerous other games.

Interest mounted in management games and in May 1959, the National Symposium on Management Games was held at the University of Kansas. The purpose of the symposium was to bring together the various interests in the creation and use of management games and to attempt to plan for future development of simulations. Since this first gathering other conferences have been held for the study and discussion of gaming.[19]

By 1961, management games had been played by at least 30,000 business executives and several thousand college students. Many colleges and universities had included management games in the curriculum. The

popularity of management games was not limited to this country alone, games were being played in Switzerland, Spain, France, Brazil, Sweden, Poland, Mexico, Italy, and Japan. In fact, many of these countries have developed their own games.[20]

Since their conception, management games have remained essentially unchanged; however, there has been an expansion of their usefullness. In the earlier games attention was devoted to the development of the top executive; in later games the design was extended to include middle management training and some simulations have focused on the development of supervisors. Then too, as occurred in the later development of the war game, business simulations have become a research tool, that is, a method by which the industrialist can formulate and test new techniques and policies.

FOOTNOTES

Chapter I

1. "Games," Encyclopaedia Americana (New York: Americana Corp., 1960), Vol. 12, p. 266

2. Shepard Barclay, "Chess," Encyclopaedia Americana (New York: Americana Corp., 1960), Vol. 6, p. 424.

3. The United States Naval War College, Fundamentals of War Gaming (New port, R. I.: The United States Naval War College, 1961), pp. 2-1.

4. Farrand Sayre, Map Maneuvers and Tactical Rides (fifth edition: Springfield, Mass., Springfield Printing and Binding Co., 1911) p. 5.

5. Fundamentals of War Gaming, loc. cit.

6. For a detailed discussion of "King's Game" see Fundamentals of War Gaming, pp. 2-1.

7. Sayre, loc. cit.

8. Fundamentals of War Gaming, op. cit., p. 2-2.

9. Sayre, op. cit., pp. 6-7.

10. For a detailed description of various contributions to war gaming during this period see Map Maneuvers and Tactical Rides, pp. 5-7.

11. The difficiencies of the early games are enumerated in Fundamentals of War Gaming, pp. 2-4.

12. Fundamentals of War Gaming, op. cit., pp. 2-4.

13. Sayre, op. cit., p. 7.

14. Fundamentals of War Gaming, op. cit., pp. 2-5.

15. It is interesting to note that the game developed by Lt. Von Reisswitz was enthusiastically accepted by senior officers. The resulting attention shown Von Reisswitz resulted in the creation of jealousy among other officers finally resulting in his transfer to a frontier fortress, Torgau. In 1827, Von Reisswitz committed suicide.

16. Sayre, op. cit., p. 10.

17. Joel M. Kibbe, Clifford J. Craft, Burt Nanus, Management Games (New York: Reinhold Publishing Corp., 1961), pp. 6-7.

18. Ibid., p.17

19. Two of the more important conferences were held in 1961, The Conference on Business Games as Teaching Devices, held at Tulane University and the American Management Association's Symposium on Simulation and Gaming.

20. Lois Stewart, "A survey of Business Games," Simulation and Gaming: A Symposium (New York: American Management Association, Inc., 1961), p. 17.

CHAPTER II

CHARACTERISTICS AND DESIGN OF MANAGEMENT GAMES

Industry and educators, not unlike the military, have endeavored to gain realism in their training methods. To this end, different techniques have been contrived to subject the trainee to the pressures and irregularities that are characteristically a part of the business world. The traditional lecture method has not outlived its usefullness, on the contrary, it will always command a prominent position in education. The student must first be exposed to knowledge before it can be used.

Instructional techniques developed to introduce the pupil to problems involved in the manipulation of life-like data in the solution of professional problems include:[1]

1. Case study method
2. In-basket problem
3. Incident process
4. Management games or business gaming

Each of these techniques has proven useful, consistent with inherent design restrictions. However, all except business gaming, lack two important ingredients of realism--objectivity of feedback and an extension of the time dimension. The greater potential effectiveness of management games as training device has been keyed to these two factors.[2]

I. GENERAL ASPECTS OF MANAGEMENT GAME DESIGN

Game Objectives and Design Limitations

Management games, developed as instructional devices, are structured to fulfill specific pedagogical

objectives. Instructional goals of simulations range from simple to the sublime, but if to be effective, play must be within the academic capabilities of the participants. Along with consideration of the abilities of participants, a management game must be designed within the human resources and facilities available to ultimate users. Needless to say, design of a computerized simulation is useless unless computer facilities would normally be available; or creation of manually computed games intended for groups that cannot secure clerical assistance is equally as nonsensical.[3]

Structural Mechanics

A management game is an end product of the combination of functions modeling a particular situation. These models are designed to receive an informational input in the form of player decisions and transform them into operational statistics. From the information generated, financial reports are prepared and disseminated to participants.

The complexity of models used in the structure of a management game will depend on the degree of realism desired. Games created to represent an abstract business enterprise are usually composed of relatively simple models. Models used in the construction of these generalized games are developed from "manufactured" data and general business and economic principles. In contrast, simulations of actual business operations are more complex--model building involved in building specific management games can require considerable time for the gathering of data and performance of associated research.[4]

Whether a management game is of a generalized or specific nature, its success will be a function of the atmosphere of realism generated during play. Verisimilitude is an important factor in a participant's acceptance of

a simulation and the achievement of its instructional goals. The complexity of models used will not necessarily guarantee verisimilitude. Unless actual operations are to be replicated, in most simulations simplified game models will suffice.

Continuous Play

Of the two unique characteristics offered by business gaming, objectivity of feedback is provided by the use of models in a game's construction. The second of these, the extension of the time dimension, is achieved by the continuous play feature of management games. Play is divided into play periods, each symbolizing a unit of real time. Operational statistics generated by the processing of a participant's decision for one period of play will, in part, serve as a foundation for decisions pertinent to the subsequent period of play.

Because of the continuous play aspect of management games, an end effect can result. End effect is, "the tendency of participants to anticipate the end of the game and engage in strategies that would be illogical or abnormal if the game were to continue."[5] In some instances end effects can be eliminated by design features, but in other simulations, action to control the end effects is restricted to non-disclosure of the game's duration to contestants.

Computational Design

Management games are constructed for either manual of computerized scoring, each having inherent advantages and disadvantages. The selection of either will be dependent upon the complexity of a simulation and facilities available to intended users of the game.

Manually executed simulations are characteristically inexpensive to design, can be simple in construction, and are less costly to execute than its computerized counterpart. Limitations imposed by manual computations restrict its use primarily to functional instruction. Simplicity of game model design is another restriction imposed on this type of simulation, occasioned by time and/or personnel required to process player decisions.

The computerized management game is limited only by the funds and equipment available. Employment of the electronic computer in business gaming affords speed and accuracy, coupled with an ability to incorporate complex models in a simulation. An intangible advantage of computerized games is that performance of calculations by a computer removes the opportunity for participants to blame their decisional errors on clerical administration.[6]

II. TYPES OF MANAGEMENT GAMES

Method of Classification

Management games are classified according to the level of management and kinds of problems on which the games focus. Classification is made as to (1) the extensiveness of a simulation and (2) if the simulation is of a specific or generalized nature. There are games that are not of one type or another, thereby creating problems in classification, as in other taxonomic ventures.[7]

Total enterprise and functional games. According to the extent and level of management simulated, management games are classified as either total enterprise or functional games. Simulations embodying all or most facets of a business, with participants assuming the role of executive managers, are considered to be of the total enterprise type. Games developed to replicate one or a

limited number of functional areas of management are classified as functional.[8]

Games classified as either total enterprise or functional can be subgrouped as generalized or specific. As presented in the previous section, generalized games symbolize abstract businesses and their actual operations.[9]

Interactive and non-interactive game design. Management games are further subgrouped as to their competitive nature. "A game is classed as "interactive" if the decisions made by one group of participants have a specific mathematically determinable effect upon the results achieved by other groups of participants."[9] Games in which the decisions of one group will not influence the operating results of others likewise are non-interactive; however, the total enterprise or functional simulation can take on either of these design features.[10]

III. USE OF MANAGEMENT GAMES BY THE MILITARY

Management Games Used by the Air Force and Army

As industry tailored the military's war game to its needs in the creation of business simulations, the military in turn has adapted the management game for the better accomplishment of its ends. Use of management games by the military has entailed their employment for both research and instructional purposes, including total enterprise and functional types in their repertoire.

More notable of management simulations created for and used by the military were two developed for the U.S. Air Force by the Rand Corporation. The first, "Laboratory Problem I," simulates the Air Force's procurement system and its associative policies. The second, "Laboratory Problem 2," was designed to simulate Intercontinental Ballistic Missile installations and their

operation. The unique aspect of "Laboratory Problem 2" was its development in 1958 to simulate installations that would not become operational until 1962-1965.[11]

Even though the Air Force has been the foremost proponent of the use of management games, the Army has also recognized their instructional worth. Functional and total enterprise type games have been incorporated into the training courses at various army commands. These simulations are employed primarily to train officers in logistic support procedures and installation management.[12]

General Aspects of the Navy's Use of Management Games

Use of management games as such by the Navy is limited if at all existent. The Navy has incorporated simulations into its training curriculums; however, these are of the war game or simulator with "canned" input types. The most notable is one used by the U.S. Naval War College, the Naval Electronic Warfare Simulator (NEWS). It was developed at an initial cost of approximately $7.25 million and subquent improvements have raised this cost to about $10. million. The per annum cost, excluding labor, for operation of NEWS and the college's associated War Gaming department for the past seven years has averaged approximately $35,000.[14] Other simulators used by the Navy includes, on-shore SONAR trainers and simulations of the functional operations of Polarus submarines.

Even in light of these, the Navy has failed to fully exploit gaming simulations by neglecting the use of the less sophisticated management games. Simulations could be developed at the upper or bureau level of command and disseminated to field activities for use in local training programs that presently rely on lecture and "on-the-job" training methods. These simulations could be manually or computer executed depending on facilities available to a user.

Three operational areas in the Navy that seem appropriate for the employment of management games for personnel training are, (1) scheduling of repair work, (2) repair part supply and procurement, and (3) all phases of the Navy's resale program. Games simulating management of repair scheduling and repair part procurement have already been created and are being used by industry.[15] Possibly these could be modified for use by the military or if not, allied simulations could be developed. An even more preghant area for inclusion of management games would be in the Navy's resale program. Simulations used in conjunction with lectures would prove to be more meaningful and instructional than the lecture and problem work sessions currently used. Development of functional and total enterprise games, depicting operations of Commissary Stores and Exchanges would not be difficult.

IV. CRITICISM OF MANAGEMENT GAMES

The use of management games for instructional purposes has been the subject of criticism from certain educational sources. These criticisms generally concern:[18]

1. Unrealistic representation
2. Omission of real world strategies (strikes, antitrust suits, etc.)
3. Discouragement of originality
4. Ignorance of qualitative factors
5. Omission of the human element

Criticisms leveled against management gaming in many cases are occasioned by poorly constructed individual games and should not invalidate the technique as a whole. Then too, these detrimental commentaries are not necessarily unbiased; one must keep in mind that management games as a tool of education has challenged a status quo; gaming

advocates are attempting to "sell" something new.[19] Surveys made by the Business Week magazine and the Remington Rand Corporation reflected that game users as a whole seemed to be satisfied. Furthermore, the same surveys disclosed that many non-users existed; however, no instances of users abandoning the use of business games were discovered.[20]

FOOTNOTES

Chapter II

1. A brief explaination of each of these methods is contained in Business Simulation, pp. 10-13.

2. Joel M. Kibbe, Clifford J. Craft, Burt Nanus, Management Games (New York: Reinhold Publishing Corp., 1961), p. 41.

3. Paul S. Greenlaw, Lonel W. Herron, Richard Randon, Business Simulation (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1962), pp. 72-75.

4. Ibid., pp. 75-77.

5. Kibbe, op. cit., p. 73.

6. Ibid., pp. 135-138.

7. Greenlaw, op. cit., pp. 16-18.

8. Ibid.

9. Ibid., p. 21.

10. Ibid., pp. 23-24.

11. Simulation in Logistic Policy Research (Simulation and Gaming: A symposium. New York: American Management Association, Report 55, 1961), pp. 69-87.

12. Two examples of the army's use of simulated gaming are "LOGSIM-WE" used at Fort Lee, Va., and "Fort Simulation U.S.A." incorporated in the curriculum at Fort Belvoir, Va.[13]

13. Greenlaw, op. cit., pp. 335-337.

14. Naval War College, New Port, R. I., letter dated 30 Sept. 1965.

15. "DISPATCH-O"[16] and Trans Canada Air Lines' "Airline Operating Game."[17]

16. Greenlaw, op. cit., p. 292.

17. Ibid., pp. 331-332.

18. A Survey of Business Games, American Management Association, op. cit., p. 23.

19. Some Aspects of Management Gaming: A Panel Discussion, American Management Association, op. cit., pp. 42-43.

20. A Survey of Business Games, op. cit., p. 25

CHAPTER III

PAY DIRT

Pay Dirt is a management game designed to simulate the basic fundamentals involved in the operation of independent petroleum producing companies. The game's basic design is such that a sponsor or game administrator is at liberty to tailor it to his own instructional needs. This customizing is accomplished through the assignment of specific game parameters prior to the commencement of play to undefined variables employed in the computer program provided to perform business computations. This is not to imply that the manner by which calculations are performed can be changed. On the contrary, methodology is specific and unchangable unless the internal mechanics of the computer program are modified. The methods specified for the performance of all calculations in the game are with only a few minor exceptions, in accordance with current accepted business procedures.

Pay Dirt has been designed as a business simulation requiring a knowledge of both petroleum engineering and business. In reviewing the game, the reader may have a tendency to overlook the requirement for a petroleum engineering background on the part of participants. The intentions of the author are that the game will be administered in such a manner that participants must have the ability to request and analyze certain engineering data in order to arrive at sound and successful financial decisions. Here again, the simulation can be tailored to meet the abilities of participants. Should an administrator or sponsor desire that play be solely based on business abilities of the contestants, the requirement for a knowledge of petroleum engineering

can be circumvented by supplying necessary engineering information in a finished form. This discussion of the prerequisites of the participants is not meant to imply that a player cannot be successful on the basis of good fortune or luck alone; this is possible. However, it is believed that by proper selection of game parameters and control of play, instances of chance success can be held to a minimum.

The reader and prospective users should not regard Pay Dirt as a capricious, parlor-type game. Each facet of the simulation has been designed to replicate some aspect of management at a company level. The primary broad objective in the scheme of the game's development is to emphasize the fact that teachings of the class room can be carried over into the world of the engineer and businessman. Secondly, when played by teams composed of individuals having diversified backgrounds, Pay Dirt will provide experience in the formation of a functional organization--an organization with an executive making decisions binding on the group as a whole. A third, and probably intangible objective of the game's play, is that of affording team members an opportunity to view the problems of others in an organization in the hope of fostering a better understanding of why the engineer and businessman must compromise decisions in the operation of a business. The game contains a provision by which a winner can be determined, but this feature is included primarily to satisfy the competitive spirit of the participants. Winner determination is not an objective of Pay Dirt. The game is offered primarily as an instructional device; a tool to better equip participants to win in their business pursuits in the world of reality.

At present, the control or business segment of Pay Dirt has been written, but it has not been computer

programmed or "debugged." Preparation for computer execution will pose no serious difficulties, and modifications will be insignificant. In its present state, the control program is much like a jig-saw puzzle. The pieces will mate and form a picture in its entirety, but minor alterations may be required before the portrayal is in its final form.

Presentation of the control program in an unfinished state is a matter of compromise. Due to time limitations imposed on the author, one of two courses of action had to be adopted; (1) either a simulation could be created lacking certain facets of operation and preliminary "debugging" accomplished or; (2) a comprehensive management game designed leaving its finalization to someone else. In a hope that Pay Dirt will evolve into a realistic and beneficial instructional device in the near future, the latter choice was selected. In this regard the author feels much as he believes Moses must have felt when permitted to view the promised land, but not allowed to enter it.

Development of the engineering phase of Pay Dirt, which is not directly coupled with the control program, has been left unattended; however, the author's thoughts for its design are in part included in Chapter IV. The reasons for not commencing the structure of the engineering phase are:

1. The author does not possess the technical petroleum engineering background to develop the many routines needed to accomplish the computation of engineering performance that might be requested by participants or create the predicted production performance required as an input for the control program.

2. Time limitations precluded development of the engineering phase, even if the author had been able to complete it.
3. The author is of the opinion that the inclusion of the various engineering routines in Pay Dirt is best left to the designs of a user of the game. By so doing, the manner by which engineering calculations are performed can be customized to specific instructional desires and abilities of participants.

By setting forth the fact that the engineering phase has not been formalized by the author, the reader should not conclude that Pay Dirt is an incomplete management game. On the contrary, the only data required by the control program that would be computed by the engineering routines are production forcasts. If desired, production data could be fabricated by the game administrator prior to play and input into the control program as required by the progress of the game's play.

This chapter will describe the simulation in general and detail. In the course of the description not only the management game itself will be included, but also the rationale and methods used for the calculation of game results. The general description of the game's overall play, the control program, and the administrator's responsibilities is proffered to add clarity as to the contribution of the simulation's individual segments to the game as a whole. In an effort to avoid redundancy, no further mention will be made of the fact that general descriptions will be followed by detailed discussions in subsequent sections of the chapter. In subsequent discussions, the computer program employed in the simulation to accomplish financial calculations and prepare play reports will be referred to as the CONTROL PROGRAM.

I. GENERAL DESCRIPTION OF PAY DIRT AND ITS PLAY

Game's Description

Pay Dirt is a simulation of the management of independent petroleum producing companies. Management of companies by participants involves purchase, exploration, development, and disposal of petroleum leases. Except in the instance of two or more participants desiring to purchase the same lease, the game is non-interactive. Many of the managerial obligations of a petroleum producer are included in the simulation, but because of the omission of some aspects of management Pay Dirt should be regarded as a generalized functional type game rather than total enterprise.

Description of Play

Play commences with pre-play decisions made by participants, establishment of game parameters by the administrator, and the allocation of organizational funds to the participating companies. Depending on the organizational structure elected for the companies by the participants, the organizational funds will be recorded as either corporate stock or a proprietary interest. In succeeding rounds of play, decisions made by participants will affect the operation of the companies under their management. These decisions will involve purchase, development, ultimate disposal of petroleum leases, and management of funds generated by and required for operations.

In the course of play, the game administrator will offer developed and undeveloped oil leases purchasable by participants. The scheme of play includes decisions pertaining to advisability of lease purchase, lease development, and financial management of the companies

involved. To this end the game administrator must avail participants with facilities to accomplish engineering and economic studies. From such studies players are expected to formulate profitable management decisions. Along these same lines, the administrator must allow sufficient time between rounds to permit participants to analyze data as well as formulate decisions. Pictorially the game's play will proceed as illustrated in Figure 3-1.

Report Generation

In the processing of player decisions by the CONTROL PROGRAM, player and administrator reports will be generated. Players will receive summaries of operations and the current financial status of their respective companies. Detailed reports of all transactions performed during the play will be supplied to the game administrator, and at his discretion the contents of these reports can be released to participants. Samples of the reports generated by the CONTROL PROGRAM are presented in Appendix C.

End Effects of Play

In the simulation, no end effects are believed to exist, but this cannot be confirmed until after play of the game has been reviewed. With the proper assignment of game parameters by the game administrator, participants should not gain an unearned advantage attributable to game termination. In the elimination of end effects, the liquidational value of the firms involved in play is computed at the conclusion of each round. This liquidational value includes: the present value of all assets and unrealized economically recoverable reserves, less the sum of outstanding debt; and the present value of ultimate lease abandonment costs. Present value of unrealized production is computed by the application of a discount rate to incremental production; discounted as if assignable revenues were realized in the middle of production periods.

PICTORIAL REPRESENTATION OF THE PLAY OF PAY DIRT

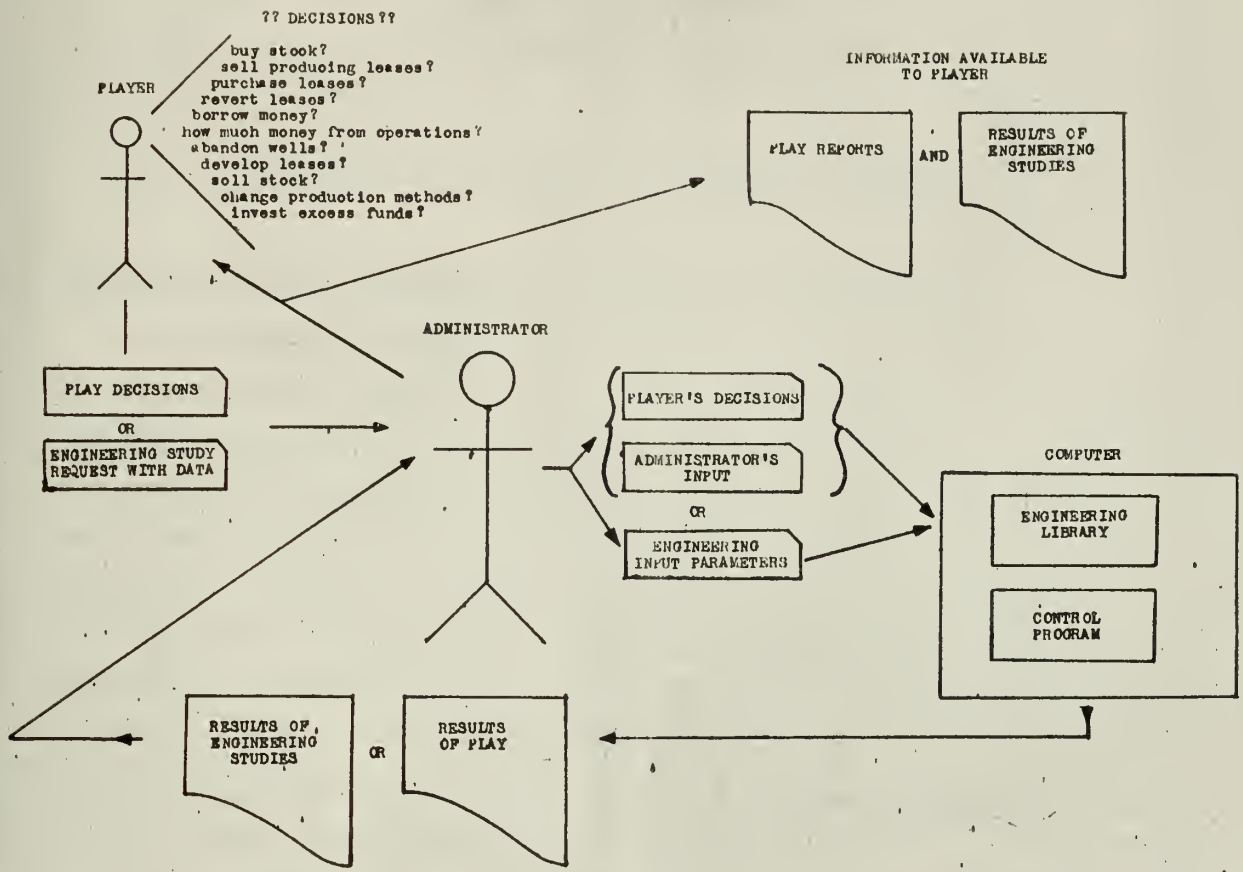


FIGURE 3 - 1

Time Representation of Play Periods

The time duration of each round of play is established by the game administrator. The length of a round can be established as desired; provided the time unit is in whole months

II. GENERAL DESCRIPTION OF CONTROL PROGRAM

Computer Requirements and Program's Construction

The CONTROL PROGRAM is designed to be executed by an electronic computer having the capabilities of the IBM 7040 equipped with an auxiliary tape drive unit. The flow diagrams of the CONTROL PROGRAM presented as Appendix A, have been coded using both FORTRAN II AND IV. The actual computer storage required for execution of the program has not been determined; however, measures have been incorporated in design for the conservation of memory storage. Conservational techniques employed include:

1. Use of common variables and arrays for performance of computations.
2. Required data for computations is retained in a carry-over deck.

In reviewing the CONTROL PROGRAM and its inputs, the reader will encounter certain restrictions that have been imposed by specified numerical array dimensioning in the program. Use of the simulation in conjunction with a computer having a variable dimensioning capability will alleviate such restraints. Execution of the CONTROL PROGRAM on a computer with this capability will permit the establishment of dimensions as desired by a game's administrator and introduced as game parameters.

Presentation of the detailed descriptions of the simulation's decisional and parametric inputs embodies many of the operational aspects of the CONTROL PROGRAM. In recognition of this and for the sake of brevity, a detailed

description of the CONTROL PROGRAM as such is not contained in this chapter. Readers will find it helpful to refer to Figure 3-2 for a block diagram of the sequential data processing and play report preparation performed by the CONTROL PROGRAM. Those desiring a detailed diagramatic description can consult the computer flow charts reflecting all data processing accomplished by the CONTROL PROGRAM. In structions for preparation and arrangement of inputs appear as Appendix B.

III. PARTICIPANT'S PRE-PLAY DECISIONS

General Discussion of Pre-Play Decisions

Participant's play commences with designation of the organizational structure of the companies which are involved. Superficially, the pre-play decision may seem insignificant; however, these should not be lightly considered for dependent on a company's organization its tax rate and sources of outside capital will be dictated. Once made, a firm's organization cannot be altered. The proper tailoring of a company's organization to an anticipated and pursued scheme of play may prove to be a deciding factor in the outcome of the game.

Company Organization

In the selection of a company's legal structure, a participant may choose either a proprietary or corporate form, the two more commonly existent in the business world.[1] With the designation of a company's organizational structure, the participant establishes not only the method by which federal income tax will be computed, but also the sources available for the acquisition of outside capital.

Corporate Taxation

Federal income tax for corporations is computed by the application of a corporate tax rate as established by the game administrator to a company's taxable income. Taxable income

DATA PROCESSING PERFORMED BY THE CONTROL PROGRAM

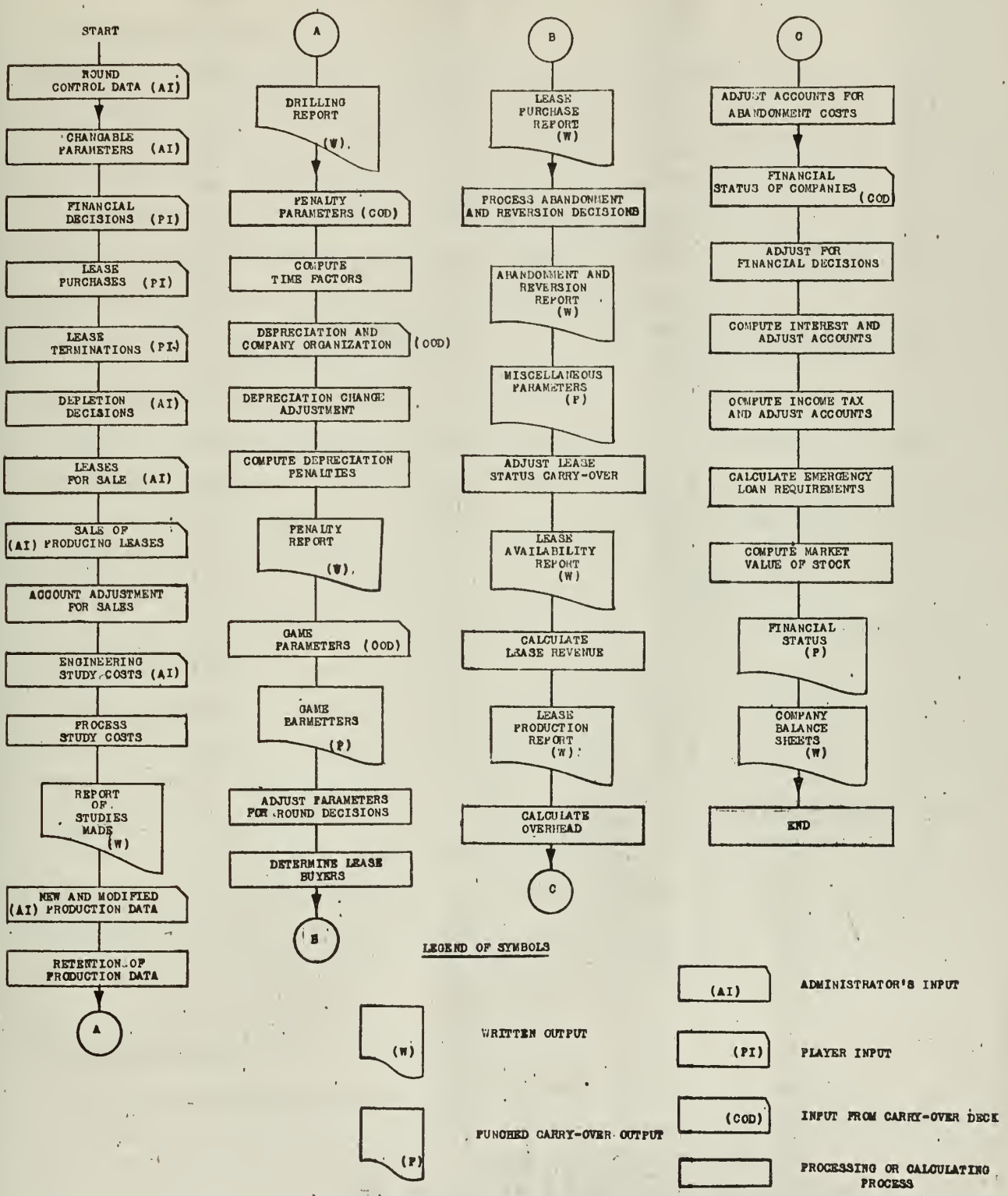


FIGURE 3 - 2

is determined by the subtraction of authorized tax deductions from revenue generated through operations. Allowable tax deductions include operating losses, operating expenses, depreciation, depletion, penalties, severance tax applicable to petroleum production, and interest charges on debt capital used in operations. Should a participant realize a profit from the sale of producing leases, any such profit is treated as a capital gain and taxed separately at the capital gains rate.

In the simulation, franchise tax and annual incorporation tax are not levied against participants electing corporate organization because of the insignificance of these charges in the game's overall play.[2]

Upon termination of play, should it be desired to compare the performance of participants, some having operated as proprietorships and others as corporations, it is necessary to tax any capital gains of the corporate managers prior to comparison. This additional assesment accomplishes the personal taxation required at the distribution of corporate earnings to the shareholders of an enterprise. Earnings for the most part are retained by the companies, therefore at the termination of play, earnings in excess of the original fund allocation, constitute capital gains. If during the game, all participants select the same organizational structure, the levying of this additional capital gains tax is not necessary.[3]

Corporate Sources of Capital

Participants electing to incorporate, will command all sources of outside capital available to proprietorships, and in addition an ability to sell corporate stock. Even though the sale of stock is a source of interestfree capital, this capital is not available without cost to the participants. The cost involved in the sale of stock is vested in stock issuance charges and the additional claims against a company's holding incurred by the increase

in outstanding stock. As a side line in the game's play, a participant could utilize the stock feature of the simulation as an auxiliary source of income by issuing stock at inflated market value and purchase it during periods of price depression.

Proprietary Taxation

Income realized by participating companies operating under a proprietary organization is subject to federal income taxation at a rate commensurate with the personal tax schedule established by the game administrator. Income generated by proprietorships are subject to the same deductions as prescribed for corporations, with capital gains being taxed separately at the capital gains rate. By virture of the fact that assets of a proprietorship belong to the owner of a company and income is taxed at a personal tax rate as generated, no additional taxation is required at the termination of play.

Proprietary Sources of Outside Capital

Sources of outside capital available to participants choosing proprietary organization is restricted to debt capital alone--long term loans, short term loans, and the automatically incurred emergency loans resulting from cash deficits occurring during play. In accordance with prescribed regulations, a proprietorship cannot issue capital stock. Should a participant unwarrantably attempt to issue stock, either through ignorance or in an attempt to "blow up" the CONTROL PROGRAM, a penalty will be levied aginst the offender. This penalty will be imposed in an amount equal to the stock issuance cost had the transaction been authorized. This feature has been incorporated to discourage efforts directed at locating weak points in the simulation rather than engaging in constructive play and as an inducement for participants to become familiar

with the operational characteristics of the two organizational business forms.

The effectiveness of a company's organizational structure will depend upon an individual's design for play and the game administrator's assignment of game parameters; therefore, the merits of the two company structures will not be discussed.[4] It is noteworthy to reiterate that once registered, the organizational decision of a participant cannot be changed.

IV. PARTICIPANT'S PLAY DECISIONS

General Description of Participant's Play Decisions

Play of Pay Dirt is focused on a participant's ability to make financial and operational decisions. Decisions for each round of play should be founded on a predetermined scheme of management and evaluation of the circumstances surrounding a company's operation. Once made, these decisions are transposed by the CONTROL PROGRAM into a financial status of the companies involved. The success or failure of a participant, for the most part, hinges on his ability to analyze investment opportunities, making financial and operational decisions consistent with such an analysis.

Play decisions embody most facets of capital budgeting, "...a many-sided activity that includes searching for new and more profitable investment proposals, investigating engineering and marketing considerations to predict the consequence of accepting the investment, and making economic analysis to determine the profit potential of each investment proposal."[5] The player decisions involved in play are catagorized as either financial or operational.

In the formulation of financial decisions, a participant must discharge the duties of a financial manager--the person responsible for the in and out flow of funds in a

business organization. Serving in this capacity the participant must insure that, "...a business is supplied with adequate, but not excessive funds, at the proper time, on the best terms obtainable."[6] Company operations include the maintenance of existent investments and company expansion by additional investments. As a financial manager must provide for the acquisition of outside capital, he must also guard against allowing funds lying idle should proceeds realized from operations exceed programmed uses. To preclude unemployment of monitary assets, in the absence of suitable long term securities can be purchased that are convertible to cash if desired by a holding player.

The second broad catagory of play decisions, those of an operational nature, are the most vital of the simulation. Operational decisions embrace both the employment of a participant's business and petroleum engineering abilities, directed toward the generation of profits through investments. The player's role does not end with the acquisition of investments; once made, investments must be developed and managed in an effort to maximize profits. One particularily important type of investment management involves operational decisions revolving around the abandonment or surrender of investments proving unprofitable. The simulation has been designed to offer the contestants ample opportunity to "send good money after bad," i.e., operate at a loss when certain management responsibilities are neglected.

Financial decisions. Financial decisions are concentrated upon the acquisition of outside capital, repayment of debt issues, employment of funds in excess of operational or long term investment needs, and purchase of outstanding company stock as applicable. Specifically, the financial decisions made by participants include:

1. Long term loans.

In the course of play should a participant require outside capital for the funding of investments and/or operations, such can be acquired through the assumption of long term debt. This source of capital is available to both the proprietary and corporate forms of company organizations. Loans are not assigned a maturity or repayment date; therefore they can be considered of an indefinite nature. Commencing with the period in which a long term loan is incurred, a participant will be charged interest on the debt.

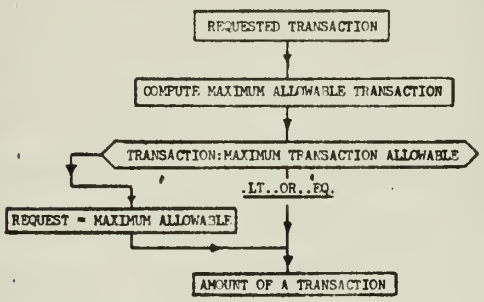
A participant is at liberty to request long term loans as desired; however, these will be granted as a function of a company's unencumbered assets. This procedure is consistent with at least one practice employed in business.[7] The limiting function is linear with loan requests processed by the CONTROL PROGRAM as set forth in Figure 3-3.

In the course of the game should a participant desire to repay long term loans, he may do so at his discretion. Repayment is restricted only to the amount of long term debts outstanding. Request for long term loan repayment in excess of the amount incurred will be modified by the CONTROL PROGRAM and the altered decision processed.

2. Short term loans.

A second, but less desirable method for the acquisition of outside capital is through short term loans. Short term debt financing in the simulation differs from that of long term debt in two respects, (1) the amount of short term loans are not restricted as to the unencumbered assets held by a company and (2)

CALCULATION OF MAXIMUM ALLOWABLE LONG TERM LOAN INCURRANCE OR STOCK SALE



COMPUTATION OF THE MAXIMUM TRANSACTION ALLOWABLE

TRANSACTION ALLOWABLE = FACTOR X COMPANY LIQUID VALUE

WHERE:

TRANSACTION	EITHER A PLAYER'S STOCK SALE (STOCK(I)) OR LONG TERM LOAN (TLOAN(I)) REQUEST REGISTERED IN THE FINANCIAL DECIAIONS
FACTOR	EITHER THE LONG TERM LOAN (TLNFAC) OR STOCK SALE (STKFAC) FACTOR ESTABLISHED BY THE AIMINISTRATOR
COMPANY LIQUID VALUE	THE VALUE OF A PLAYER'S HOLDINGS CONSISTING OF THE BOOK VALUE OF TANGIBLE ASSETS PLUS ECONOMICALLY RECOVERABLE RESERVES DISCOUNTED AT AN ADMINISTRATOR ESTABLISHED DISCOUNT RATE (DRATE

FIGURE 3 - 3

short term debt is designed to have a higher interest rate associated with its use. As with the long term loans, this method for the acquisition of outside funding is available to the proprietorship and corporation alike.

The purpose of short term financing in the simulation is much the same as in the business world, "...(short-term loans) are most often used by small companies or by those which are unable to attract funds from "orthodox" sources."[8] Under no circumstances should short term capital be as or less expensive as long term debt. Its use is designed as a source of capital when a company's assets will not support long term financing. Repayment of short term loans can be made at the discretion of the participant, subject to the same restrictions as for long term loans. The incurrance of short term loans is not limited as are long term loans, therefore participants requests are processed by the CONTROL PROGRAM as registered by the participants in their financial decisions.

3. Emergency loans.

Although not a part of a participant's financial decision, but definitely a factor in financial management, is the emergency loan feature of the simulation. During any round of play should a participant over extend his availability of cash funds, the resultant cash deficit will be off-set by an emergency loan. Emergency loans will be automatically made by the CONTROL PROGRAM. The interest rate for emergency loans is another of the game parameters established by the game administrator, designed to carry the highest interest rate of all forms of financing. The emergency loan feature has been included as a penalty for improper capital budgeting.

In the formulation of financial resolutions, participants are not restricted by fund availability with regard to the amount of loan repayment, stock purchase, and short term security purchase. Should any of these transactions cause or contribute an overall cash deficit during a round of play, the deficit will be defrayed by an emergency loan.

4. Short term securities.

During play a participant can purchase short term securities. This feature has been inserted replicating low yield, easily converted government bond or Treasury bills utilized in business for temporary investment purpose.[9] By the purchase of the short term securities excess capital can be utilized, earning a return, rather than lying idle. Once short term investments have been made, should other more profitable uses of funds be encountered, the securities can be converted to cash and used during any round. Except for the fact that short term securities earn dividends, these are handled in the same manner as is cash.

Purchase or sale of short term securities will not involve a charge to participants. The annual dividend rate earned is included as one of the game parameters established by the game administrator.

5. Sale of excess equipment.

Should a participant elect to abandon a producing lease, the book value of all tangible assets assigned to the lease will be declared excess equipment. Conversion of excess equipment to cash will be accomplished at the book value of the equipment at the time that the assets become excess if such is requested.

6. Sale of corporate stock.

A source of outside capital available to corporations, but not proprietorships, is the sale of corporate stock. Stock issuance is subject to the same restriction as the incurrence of a long term debt, except that the slope of the restrictive linear function may or may not be the same. In either case the slopes of the linear functions are included as game parameters.

Participants will register any decision for the sale of stock as the total money value desired to be realized from the transaction. Should the request exceed the maximum sale allowed, the decision will be reduced to the maximum allowable and the modified decision processed by the CONTROL PROGRAM. The CONTROL PROGRAM's handling of stock sale requests is accomplished as specified in Figure 3-3.

Sale of corporate stock will involve a floatation charge and additional outside claims against a company's assets. The issuance cost for the sale of stock is based on a schedule established by the game administrator. This technique for the determination of floatation charges is similar to that used in the business world.[10] Stock issuance is based on an issue's current market value. By relating the total monitary value of a stock issue to the stock's current market value, the number of additional shares of outstanding stock is determined. Outstanding shares of stock in excess of the holdings of the participant managing the company will constitute outside claims against a company. At the conclusion of the game a participant will be credited with his prorata share of a company's liquidation value based on the number of shares of stock held in relation to the total corporate stock outstanding.

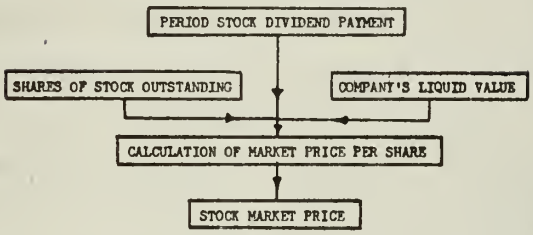
Should a participant desire to purchase stock of the company under his cognizance he may do so. Purchase of corporate stock will entail a charge computed in the same manner as for stock issuance, but based on a different charge schedule. Stock will be purchased at its current market value and once purchased, retired. A participant is restricted in stock purchase to that amount outstanding.

7. Dividend declaration.

Participants operating under a corporate company structure can elect to distribute dividends during any round to the stock holders of their companies. Such dividends will be recorded by participants as the dividend desired to be paid per share of outstanding stock for a particular period of play regardless of the period length. Outstanding stock will include only stock outstanding from previous rounds stock transactions of a current period.

Payment of dividends and liquidation value of a company's holdings each contribute to the market value of a company's corporate stock. This relationship is founded on a modification of a method presented by Modigliani for the determination of the cost of capital attributable to the sale of common stock.[11] The market value of a company's corporate stock is the liquidational value of a company's holdings prorated as per the number of outstanding shares of company stock plus the yield rate of the stock for a period of play.[12] The method for the computation of the market value of corporate stock for each of the companies involved in play is shown in Figure 3-4.

CALCULATION OF MARKET VALUE OF CORPORATE STOCK


PERIOD STOCK DIVIDEND PAYMENT
SHARES OF STOCK OUTSTANDING
COMPANY'S LIQUID VALUE
CALCULATION OF MARKET PRICE PER SHARE
STOCK MARKET PRICE

CALCULATION OF MARKET VALUE PER SHARE:

YIELD RATE = DIV / TIME

TIME = (Y(I) / FOVHM) + YEILD RATE

SUBSTITUTION AND REDUCTION:

$$(FOVHM \times TIME^2) - (Y(I) \times TIME) - (DIV \times FOVHM) = 0.$$

APPLYING THE GENERAL QUADRATIC EQUATION:

$$TIME = \frac{Y(I) + \sqrt{Y(I)^2 + (4. \times FOVHM^2 \times DIV)}}{2. \times FOVHM}$$

WHERE:

TIME	MARKET PRICE OF STOCK PER SHARE
Y(I)	LIQUID VALUE OF A COMPANY'S HOLDINGS
FOVHM	NUMBER OF SHARES OF STOCK OF A COMPANY
DIV	DIVIDEND PAID PER SHARE DURING A PERIOD

FIGURE 3 - 4

Operational decisions. Participants normally will be required to make decisions in each of the areas of company operations listed below:

1. Acquisition of developed and/or undeveloped prospective petroleum producing leases.
2. The request for and analysis of engineering studies made on undeveloped leases or existent production.
3. Development of prospective petroleum producing leases including allocation of development costs and establishment of initial production method to be used.
4. Management with respect to designation of method to be used in the computation of depreciation and of deplition allowances pertinent to production.
5. Modification of production as deemed necessary to maximize profits.
6. Disposition of previously acquired investments by abandonment, lease reversion, and sale.
7. Equipment renewals.

Decisions in these areas of management will be registered in either of two ways: (1) included as a part of the participant's decisional input into the CONTROL PROGRAM or (2) decisions declared to the game administrator and entered as part of the administrator's input into the CONTROL PROGRAM.

As the reader reviews the operational decisions, it becomes evident as to why these are the crux of Pay Dirt. Certainly each facet of the simulation is important instructionally, but operational decisions truly are the critical test of a participant's abilities. One might well say that in this area the player will either leave

his mark as successful, mediocre, or lacking in the necessary qualities as a manager of financial and natural resources.

1. Acquisition of undeveloped leases.

In each round, undeveloped prospective petroleum producing leases will be offered for sale to participants. Leases advertised during a round of play may be purchased by players. This is accomplished by the indication by the participant of the lease number and his delay rental bid on the "Lease Purchase" decision sheet. The number of lease bids that may be submitted during a single round is limited to eight. Participants bidding on leases are not restricted to the published delay rental. Participants can submit bids equal to or in excess of the "advertised price." In the CONTROL PROGRAM, bids for the purchase of a particular lease will be considered and the player having submitted the highest bid will be awarded the lease. Should two or more participants submit the same maximum bid for a particular lease, lease award will be made by a random process. Bids submitted for lease purchase that are less than the published delay rental will not be considered.

Once a lease has been purchased by a participant, the CONTROL PROGRAM will register the participant's delay rental bid as that pertinent to the lease regardless of the original offered rental charge. At the time of purchase, a lease buyer will be charged a purchase bonus amounting to some multiple of the annual delay rental bid. Bonus payments paid for acquisition will be capitalized as an intangible asset pursuant to prescribed procedures.[13] The multiple employed to compute lease bonus payments is one of the game parameters.

Leases available for purchase will be considered as having habendun and drilling clauses.[14] The primary term and time period allowed for development before delay rental payments commence are set by the game administrator. Delay rental payments or ultimate lease termination imposed by the foregoing clauses can be circumvented by lease development. Lease development will be accomplished on the lease as a whole; development is not satisfied by the drilling of test wells only. Should a participant fail to develop a lease within a specific time period, a delay rental charge will be levied against the player. This delay rental charge will be the product of the annual delay rental applicable to a lease and the lease acreage, prorated for time duration of the play period. Furthermore, failure to develope a lease within the primary term[15] will result in reversion of the lease to the game and again offered for sale to participants.

2. Engineering studies, lease development, and change of production methods.

Provisions for the performance of engineering studies, change of production methods, and lease development have been left to the design of the game's user. These decisional areas are closely aligned with the development of the games engineering phase, designed to meet the specific desires of the sponsor.

3. Depreciation of tangible assets.

In the accounting process, revenues of a particular period should be charged with the costs which are reasonably associated with production represented by such revenues.[16] Most fixed or tangible assets excepting

land, have a limited useful life and an apportioned cost of assets are properly chargable as an expense in the accounting period in which the asset is used. "The accounting process for this gradual conversion of fixed assets into expense is called depreciation."[17]

There are numerous methods for the estimation of depreciation; however, each are, or should be, designed to accomplish three principle purposes:[18]

1. Proper charging of depreciation to the operating expenses of an enterprise, so that profits reflect capital consumption costs.
2. Provide for capital consumption costs.
3. Proper recording of depreciable assets in the accounts of the company.

Of various methods designed for the estimation of depreciation three are specifically described in the 1954 tax code, (1) straight line, (2) double declining balance, and (3) the sum of the-years-digits methods.[19] Of the three, the latter two are classified as accelerated depreciation providing greater expenditure of an asset's cost in its early life with the amount of depreciation decreasing with the passage of time. The straight line method provides a time proration of an asset cost over the life of the asset. In the selection of a technique for the calculation of depreciation for tax purposes, any method specified in the 1954 tax code is acceptable. Once a method has been used, it cannot be altered at the discretion of the taxpayer, except in the instance of double declining balance which can be changed to straight line as desired.

In the simulation inclusion of depreciation has been designed conforming to each of the forementioned principles or procedures. Methods available have been restricted to the three techniques. In all respects the calculation of depreciation and processing of this expense

is in accordance with current accepted business practices.

Two assumptions that have been incorporated into the game that may or may not be realistic are (1) all equipment has been assigned at zero salvage value at the end of its specified life, and (2) the market value of tangible assets is the book value of the assets at any time during play.

During play, participants will register depreciation decisions at the time a lease is developed. Included in the CONTROL PROGRAM's input for new lease development will be a numerical coding of the method to be used for the computation of depreciation. Once a choice has been made, it is irrevocable, except in the election of double declining balance that may be changed to straight line at any time. Participants desiring to change their selected method for estimation of depreciation can do so on a lease by lease basis. During a single round of play, changes requested by a player cannot exceed eight.

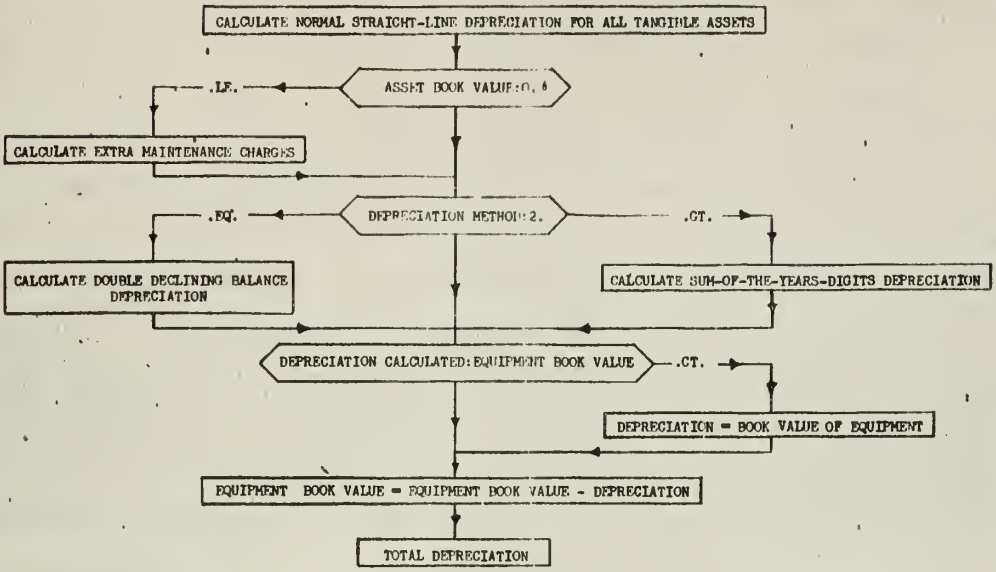
In the course of play, should a participant inadvertently or deliberately register an unauthorized change of the depreciation technique pertinent to a particular lease, the modification will not be affected. Such action will result in the assessment of a penalty against participants, attempting to unwarrentably change a depreciation method.

Considering that the three techniques included for the computation of depreciation are contained in many business texts no further discussion of these will be presented.[20] The mathematical models on which depreciation calculations are based and their adaptation for inclusion in the CONTROL PROGRAM are presented in Figure 3-5.

4. Depletion Allowance.

Persons or companies engaged in the production of petroleum are entitled to a federal income tax deduction

DEPRECIATION AND EXTRA MAINTENANCE CHARGE CALCULATIONS



DEPRECIATION CALCULATIONS

STANDARD BUSINESS MODEL

STRAIGHT-LINE METHOD:

$$\text{ANNUAL DEPRECIATION} = \frac{\text{EQUIPMENT COST}}{\text{EQUIPMENT LIFE IN YEARS}}$$

SUM-OF-THE-YEARS-DIGITS METHOD:

$$\text{ANNUAL DEPRECIATION} = \text{EQUIPMENT COST} \times \left(\frac{\text{YEARS USE} - 1.}{\text{SYD}}\right)$$

WHERE:

$$\text{SYD} = \sum_{N=0.}^{N = \text{EQUIPMENT LIFE IN YEARS}} N$$

DOUBLE DECLINING BALANCE METHOD:

$$\text{ANNUAL DEPRECIATION} = 2. \times \left(\frac{\text{BOOK VALUE OF EQUIPMENT}}{\text{EQUIPMENT LIFE IN YEARS}}\right)$$

CONTROL PROGRAM ADAPTATION

$$\text{PERIOD DEPRECIATION} = \frac{\text{EQUIPMENT COST}}{\text{EQUIPMENT LIFE IN MONTHS}} \times \text{PFAC}$$

$$\text{PERIOD DEPRECIATION} = \sum_{N=1}^{N = \text{PERIOD LENGTH IN MONTHS}} \text{EQUIPMENT COST} \times \left(\frac{A - N + 1. - \text{PURPD}}{\text{SMD}}\right)$$

$$\text{SMD} = \sum_{N=0.}^{N = \text{LIFE OF EQUIPMENT IN MONTHS}} N$$

A = EQUIPMENT LIFE IN MONTHS

PURPD = PURCHASE PERIOD OF EQUIPMENT

$$\text{PERIOD DEPRECIATION} = 2. \times \left(\frac{\text{BOOK VALUE OF EQUIPMENT}}{\text{EQUIPMENT LIFE IN MONTHS}}\right) \times \text{PFAC}$$

WHERE:

PFAC — FRACTIONAL PART OF A YEAR REPRESENTED BY A PLAY PERIOD

DEPRECIATION METHOD CODING USED IN THE CONTROL PROGRAM:

1. STRAIGHT-LINE METHOD DEPRECIATION
2. DOUBLE DECLINING BALANCE METHOD DEPRECIATION
3. SUM-OF-THE-YEARS-DIGITS METHOD DEPRECIATION

FIGURE 3 - 5

known as depletion. The theory surrounding this deduction rests in the fact that, whenever wasting assets are removed from their natural position or native state, the original value is reduced by the amount of production. "This gradual reduction of the original quantity is known as 'depletion' and it is to provide for this reduction that the law permits annual depletion deduction in figuring income."[21] If properly managed, depletion can result in tax deductions even after full costs have been expensed. This procedure is accepted and allowable, in recognition of the fact that one of the objectives of one type of depletion, percentage depletion, is the encouragement of exploration.[22]

The United States income tax laws provide two methods by which depletion can be calculated. (1) cost depletion and (2) percentage depletion. Cost depletion is based on property costs to a taxpayer and is computed on a unit of production method. The second of the two depletion methods, percentage depletion, is based upon an approximation of the cost of replacing an equivalent amount of oil or gas produced and sold.[23] In the computation of the depletion allowance, a tax payer is at liberty to choose either of the two methods, providing of course, that computations are performed in accordance with existent regulations.[24] There is one restriction, however, in the choice of depletion to the extent that should cost depletion during a tax period exceed percentage depletion, cost depletion must be elected.[25]

In the simulation, participants are required to designate the method for computation of depletion for each of the producing leases under their management for each round. Upon determination, player's decisions will be supplied to the game administrator and included as part of his play input. Processing of depletion decision will be carried out by the CONTROL PROGRAM in accordance with current accepted procedures except that should a

participant select percentage depletion when cost depletion is greater, computation will be accomplished as designated. This deviation from existent regulations is permitted as a penalty levied against an offending participant. The penalty is in the form of the tax deduction lost due to the incorrect choice.

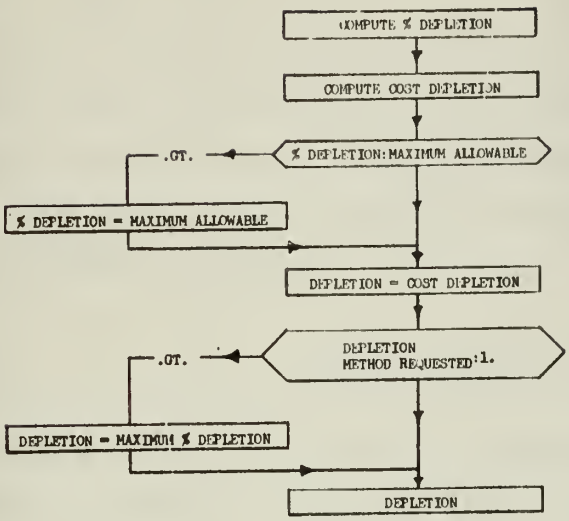
Depletion and limiting percentages required by the CONTROL PROGRAM are included in the game parameters. Mathematical description of models reflecting accepted methods for the calculation of depletion and their adaptation for insertion in the CONTROL PROGRAM are presented in Figure 3-6.

5. Development cost designation.

Lease development by an operator involves incurrence of two classifications of charges. The first of these is the cost of tangible assets primarily in the form of equipment which must be capitalized and expensed through depreciation. The second type of charge is intangible drilling costs which an operator can elect to expense in a current period or capitalize as intangible assets. Should capitalization be elected, these changes are expensed to operations through a depletion allowance applicable to production.[26]

The designation of development costs can represent a very important decision on the part of an operator. The operator, for the most part has very little, if any, control over the assignment of costs classified as tangible assets. On the other hand, the decision as to the expenditure or capitalization of intangible assets could have a decided affect on earnings. This effect is not realized as a reduction in costs at the time of development, but through federal income tax deductions in current or later play periods.[27] This facet is included in the simulation as

DEPLETION CALCULATIONS



RELATIONSHIPS USED FOR DEPLETION CALCULATIONS:

% DEPLETION:

% DEPLETION = PCDEPL X VALUE OF GROSS INCOME FROM PRODUCTION

% DEPLETION MAXIMUM:

DEPLETION MAXIMUM = DEPMAX X TAXABLE INCOME

COST DEPLETION:

$$\text{COST DEPLETION} = B \times \left(\frac{P}{R + P}\right)$$

WHERE:

B	NON-EXPENSED INTANGIBLE ASSETS ASSIGNED A LEASE
P	PRODUCTION DURING A PERIOD (EXPRESSED IN MCF FOR GAS OR BBL. FOR OIL)
R	RECOVERABLE RESERVES OF A LEASE BEFORE PRODUCTION DURING A PERIOD (EXPRESSED IN MCF FOR GAS OR BBL. FOR OIL)
PCDEPL	PERCENTAGE OF GROSS INCOME ALLOWED AS A DEPLETION DEDUCTION (EXPRESSED AS A DECIMAL PERCENTAGE)
DEPMAX	PERCENTAGE OF TAXABLE INCOME THAT PERCENTAGE DEPLETION CANNOT EXCEED (EXPRESSED AS A DECIMAL PERCENTAGE)

DEPLETION METHOD CODING:

1.	COST DEPLETION
2.	PERCENTAGE DEPLETION

FIGURE 3 - 6

an operational decision that must be made by a participant developing a lease. Participants are informed by the administrator of the total development cost incurred from drilling. These costs will in turn be divided into a portion to be capitalized as tangible assets with the remainder being designated as an expense and/or intangible asset to be capitalized. The participant's decision will be returned to the game administrator for entry into the CONTROL PROGRAM.

6. Lease reversion.

In addition to inclusion of delay rental clauses in leases purchased by participants, these clauses will be of the "OR" type. In effect the "OR" clause provides, "(the lessor is) entitled to the stipulated rental until the lease is formally terminated by surrender."[28]

Should a participant desire to surrender a lease he can do so at any time after the lease is purchased and before termination. Participants may revert any number of leases not to exceed eight during a single round.

Once a lease has been reverted, the lease is again offered for sale to the participants. Only undeveloped leases may be reverted; developed leases must be abandoned. Delay rental payments, if applicable, will cease in the round in which a lease is reverted with no expense entailed for reversion. In the case of requested reversion of developed leases or the surrender of leases not owned by the requesting player, no action will be taken by the CONTROL PROGRAM.

7. Lease Abandonment.

In the management of a petroleum producing lease,

an operator, at his option, can abandon the lease and the wells contained there-on. By definition, abandonment is "the relinquishment of a right or of property with the intention of not reclaiming it or of reassuming its ownership or enjoyment."[29] Along with the relinquishment of claims to or against abandoned property, certain abandonment operations must be performed on existent wells.[30] These obligations are imposed for the preservation of public safety and the conservation of remaining natural resources.

Lease abandonment in the simulation is characteristic of the practices in reality. Once a lease has been abandoned the lease will be retired from play and producing wells cannot be reopened for production. Well abandonment will involve an expense to the abandoning participants. This expense will be based on the number of wells involved, and a per well abandonment charge established by the game administrator.

The maximum number of leases that can be abandoned during a single round of play is restricted to eight. Abandonment decisions are included in the participants decisions and not necessarily subject to review by the administrator. If a participant attempts to abandon a lease owned by another player, an abandonment penalty will be levied with no other action taken. The amount of the abandonment penalty is another of the game parameters.

8. Direct transaction of lease sale.

Provisions are included in the simulation, permitting the sale of developed leases by the game administrator or participants. Subject sales will be transacted between prospective buyers and sellers, whether the seller is a participant or the game administrator. At the culmination of negotiations the sale price, seller, and buyer will be

supplied the administrator. Transfers of interest will be included in the administrator's play input.

In the instance of the sale of producing leases by the administrator, the production information pertinent to the lease sold will be a part of the CONTROL PROGRAM's input during the round in which the sale is consumated. Transfer of interest and production credit for transactions between participants will be accomplished in the round in which the change in ownership is entered by the administrator. Any profit realized by a participant through property sale, i.e., the difference between the sale price and sum of the total book value of tangible and intangible assets, will be subject to long term capital gains taxation.

9. Equipment renewal.

Tangible assets, except land, employed in business are assigned a functional life for depreciation purposes. In many instances, however, this specified time period is at best only an educated guess. Assets normally can be used beyond their estimated lifetime, but often at the expense of greater than normal maintenance costs. In the operation of a business involving production equipment, the operator can be faced with many decisions involved in equipment renewal and he must determine the most profitable course of action. Alternative decisions available regarding renewal are:

1. Continued use of outdated equipment at the cost of added maintenance expense.
2. Renew equipment.
3. Discontinue that segment of operation requiring a subject equipment renewal.

In the operation of a business, determining the

best decision can be difficult, but this is especially so in petroleum production. In most cases a decision is not clear-cut. A decision to do one thing in an effort to conserve funds can result in expenditures in other areas that will more than off-set any anticipated savings.

In Pay Dirt the participant is faced with equipment renewal decisions. In the formulation of such decisions the players can elect to renew the equipment on a lease in its entirety, abandon the lease, sell the lease, or continue production at increased production costs. Should production at increased costs be elected an added maintenance expense will be incurred. This expense will consist of the product of an equipment life extention factor and the original equipment cost prorated for the period of play. This charge will be applicable to all wells on the specific lease. The equipment life extension factor is included as a game parameter and the mathematical model and its CONTROL PROGRAM adaptation for calculation of the extra maintenance charge are presented in Figure 3-5.

V. ESTABLISHMENT OF PLAY PARAMETERS

General Description of Game Parameters

Also included in the pre-play entry into the CONTROL PROGRAM are definitions of all game parameters. These are established by the game administrator and serve as the device by which Pay Dirt can be tailored to the objectives of a game's sponsor. Caution should be exercised in the assignment of values to the parameters assuring that the values are in keeping with business practice. The complexity of the various functions employed in the CONTROL PROGRAM to perform calculations has been kept to a minimum; therefore an administrator should encounter little if any difficulty in correlating the ascribed values to those existent in the business world.

Game parameters have been divided into two groups, permanent and changable. The permanent parameters, once assigned, should not require modification during a game as each is representative of reasonably stable functions in reality. Changable parameters, in contrast, symbolize life-like values that are of a dynamic nature. Dynamic, to the extent that a participant should formulate decisions contingent upon the possibility of changes as play progresses.

Should a game administrator desire to modify the changable game parameters he can do so by appropriately annotating the round of play control input and enumerating the desired changes. If, however, alterations of the permanent parameters are required, this can only be accomplished by inserting applicable changes in the CONTROL PROGRAM's carry-over deck. From round to round, the game parameters are carried over as part of the carry-over deck and at the commencement of data processing, these are automatically read into the CONTROL PROGRAM and the game variables are defined. After an intitial assignment, provided no changes are desired, further action pertaining to this segment of play administration is not required.

Definition and Discussion of Changable Parameters Established By the Game Administrator

Production Allowables. Operators engaged in the production of petroleum are normally required to produce within specific allowable limits. Production restrictions are placed on producers in many forms, one of which being production allowables. These are established as the maximum oil and/or gas that can be produced per unit of measurement. Legally, once an allowable has been established by a regulatory body, production cannot

exceed an allowable, even at the expense of discontinuing operations.[31]

Three common allowables employed in petroleum production are (1) gas production allowable applicable to gas wells, (2) oil production allowable pertinent to oil production, and/or (3) a gas-oil ratio allowable for gas and oil production. In many instances these are established on a per well production basis per unit of time, usually for one month. The gas and oil allowables are self explanatory, but the gas-oil ratio allowable is slightly more involved. The gas-oil ratio is pertinent to oil producing wells that have gas in solution with the oil. (This is universal in oil production.) If a gas-oil ratio allowable is fixed along with an oil allowable, the operator is restricted in two areas; (1) the maximum production of oil and (2) the maximum allowable production of solution gas. Upon reaching either of these, production must cease until commencement of the next designated time period.

In Pay Dirt, the participant can be subjected to the three forementioned allowables established by the administrator. Once designated, should the administrator choose, each may be changed from period to period. Frequent changes in production allowables are not uncommon.[32]

Sale price of oil and gas. The sale price of petroleum production is set by the game administrator and subject to change at his option. In the simulation, provisions have been made for the assignment of a sale price as per product grade. The CONTROL PROGRAM provides for the sale of production at any one of five different gas or oil prices. The selling price is determined by the grade of gas and/or oil produced as indicated by a production parameter which is included in the production data input into the CONTROL PROGRAM.

Definition and Discussion of Permanent Game Parameters Assigned By the Game Administrator

Depreciation penalty. A dollar assessment against participants attempting to unwarrantably change their pre-selected method for the computation of depreciation.

Equipment life extension factor. A decimal percentage employed to determine extra maintenance cost incurred for continued equipment use beyond its specified life.

Abandonment penalty. The penalty levied against participants attempting to abandon leases not under their management expressed in dollars.

Lease termination. In conformance with actual practice for leases having a primary term included in the habendum clause, a period of time is allowed for lease development after which the lease will terminate and revert to the lessor if not developed.[33] The primary term is applicable to all lease purchases in the simulation.

Development period allowed without incurrence of delay rental payment.

Leases containing a drilling and delay rental clause, as is assumed of the leases involved in Pay Dirt, permit a specified period for development during which the lessee is not subject to delay rental charges.[34]

Personal income tax schedule. The computation of personal income tax pertinent to proprietary company structures is accomplished by the employment of a tax schedule. The procedure for tax determination is to

bracket income between an upper and lower limit and apply the tax pertinent of the respective bracket. The tax computation in actual practice involves a charge of a flat rate for all income to and including the lower limit of a specific bracket and then an additional amount consisting of the product of the percentage assigned the tax bracket and income in excess of the bracket's lower limit. Actual personal tax schedules involve as many as 52 individual tax brackets, ranging from taxable incomes of from 0 to ∞.[35]

Basically, the same procedure has been employed in the simulation. Deviation from actual practice rests only in that the number of applicable tax brackets and rates has been restricted to 8 and tax is computed by the application of a percentage tax rate to taxable income as a whole.

Establishment of the personal tax schedule in the simulation involves the assignment of seven values to delineate the brackets (the lower and upper limits of the schedule of 0 and ∞ respectively are included in the CONTROL PROGRAM) and assignment of the 8 percentage, one to each tax bracket.

Charge assignable for stock transactions.

Generally, in the purchase or sale of stock a charge is involved. For stock purchases this charge is vested in the form of a broker's commission. For stock issuance the charge encompasses many items, some of which are: commissions, underwriting costs, and legal fees. Normally, the cost for purchase or sale of stock is based on a charge schedule, with the tariff dependent on the size of the transaction.[36]

Stock transactions in the simulation are handled much the same as actual situations with charges for stock purchase or issuance based on a schedule established

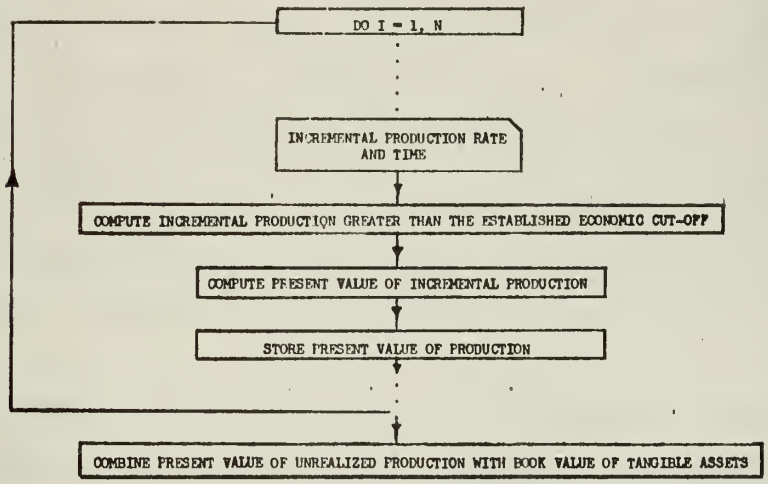
by the game's administrator. Establishment of this schedule is accomplished by the designation of seven values defining eight brackets (again the upper and lower limits are included in the CONTROL PROGRAM) and assignment of charge percentages to each of the brackets. The brackets deliniated serve for both stock purchase and issuance, but the charge percentages pertinent to each type of transaction should be different.

Capital adquisition factors. Acquisition of outside capital by the incurrence of long term loans and stock issuance is restricted to a maximum obtained by the application of some factor to the liquidation value of a company. The factors are included in the game parameters for the accomplishment of this are, (1) stock issuance factor, and (2) long term loan factor. Application of these in the data processing accomplished by the CONTROL PROGRAM is shown in Figure 3-3.

Discount rate. The discount rate included in the game parameters represents the rate of return used to discount unrealized petroleum production that in part comprises the liquidational value of a company's holdings.[37] The method for the computation of the liquid value of a company's holdings and employment of this discount rate is presented in Figure 3-7.

Interest rates. Three sources of debt capital are available to participants. Two of these, long and short term loans, are requested by financial decisions made for each round of play. The third, emergency loans, are automatically issued by the CONTROL PROGRAM to participants failing to provide sufficient cash funds to support operations during a particular round of play.

COMPUTATION OF PLAYER LIQUIDITY


DO I = 1, N
INCREMENTAL PRODUCTION RATE AND TIME
COMPUTE INCREMENTAL PRODUCTION GREATER THAN THE ESTABLISHED ECONOMIC CUT-OFF
COMPUTE PRESENT VALUE OF INCREMENTAL PRODUCTION
STORE PRESENT VALUE OF PRODUCTION
COMBINE PRESENT VALUE OF UNREALIZED PRODUCTION WITH BOOK VALUE OF TANGIBLE ASSETS

COMPUTATION OF PRESENT VALUE

STANDARD MODEL

$$Y(I) = C\left(\frac{(1 + DRATE)^{m} - 1.}{DRATE(1 + DRATE)^{m - .5}}\right)$$

CONTROL PROGRAM ADAPTATION

$$Y(I) = C\left(\frac{(1 + DRATE)^{m}}{DRATE(1. + DRATE)^{(m - (TIME / 2.)}}\right)$$

CALCULATION OF INCREMENTAL PRODUCTION:

INCREMENTAL PRODUCTION = (INCREMENTAL PRODUCTION RATE X TIME) X (1. - ROYAL)

COMBINATION OF PRESENT VALUE OF UNREALIZED PRODUCTION AND BOOK VALUE OF TANGIBLE ASSETS

$$Y(I) = Y(I) + \sum AEBOOK + \sum EQBOOK$$

WHERE:

m	TIME IN YEARS SINCE THE END OF A CURRENT PERIOD
N	NUMBER OF INCREMENTAL PRODUCTION PERIODS
Y(I)	ACCUMULATION OF PRESENT VALUE
DRATE	DISCOUNT RATE EXPRESSED AS A DECIMAL PERCENTAGE
C	UNDISCOUNTED VALUE OF INCREMENTAL PRODUCTION
AEBOOK	BOOK VALUE OF AUXILIARY EQUIPMENT
EQBOOK	BOOK VALUE OF PRODUCTION EQUIPMENT
ROYAL	LAND OWNER'S ROYALTY

FIGURE 3 - 7

Upon the incurrence of loans, a participant is subject to interest charges for the use of the funds involved. Each type of loan has an assigned interest rate, an annual rate for the short and long term loans and a monthly rate for emergency loans. Interest rates should be consistent with the type of loan, the highest overall rate assigned emergency loans and the lowest assigned to long term loans. Interest charges will be computed as the product of the assigned interest rate and loan balance at the end of a period, prorated for the time length of the period. The handling of interest calculations in the CONTROL PROGRAM is presented in Figure 3-8.

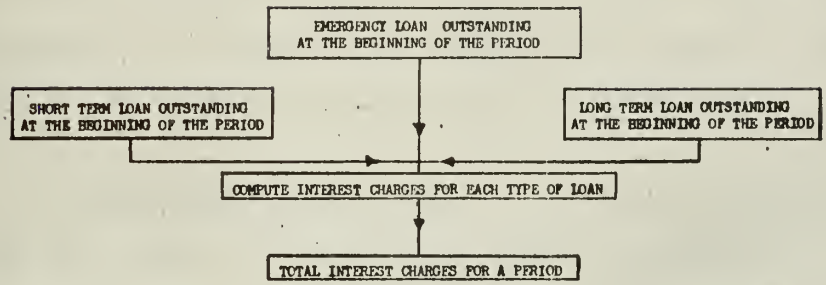
Maximum number of lease bids by participants.

The administrator will establish the maximum number of lease bids that a participant can submit during a single round of play. This restriction is imposed by the construction of the CONTROL PROGRAM which has the capability of processing a maximum of eight bids from each participant.

Number of leases available for purchase. As a requirement attributable to the construction of the CONTROL PROGRAM, the administrator must designate the total number of leases that will be offered for sale during the game's entire play. The maximum number of leases that can be offered is 100.

Short term security dividend rate. Short term securities held by participants will earn dividends during each period of play. Dividends are based on an annual short term security dividend rate prorated for the time duration of a period of play.

CALCULATION OF INTEREST CHARGES


EMERGENCY LOAN OUTSTANDING AT THE BEGINNING OF THE PERIOD
SHORT TERM LOAN OUTSTANDING AT THE BEGINNING OF THE PERIOD
LONG TERM LOAN OUTSTANDING AT THE BEGINNING OF THE PERIOD
COMPUTE INTEREST CHARGES FOR EACH TYPE OF LOAN
TOTAL INTEREST CHARGES FOR A PERIOD

CALCULATION OF INTEREST CHARGES

SHORT TERM LOAN:

DPLMAX = SUFF2 X SLNINT X PFAC

LONG TERM LOAN:

DCPLTI = SUFF1 * TLNINT * PFAC

EMERGENCY LOAN:

SEVTAX = TANOE * ELNINT * PD

WHERE:

DPLMAX	SHORT TERM LOAN INTEREST CHARGE
SUFF2	AMOUNT OF SHORT TERM LOAN OUTSTANDING AT THE BEGINNING OF A PERIOD
SLNINT	ANNUAL SHORT TERM LOAN INTEREST RATE EXPRESSED AS A DECIMAL PERCENTAGE
PFAC	FRACTIONAL PART OF A YEAR REPRESENTED BY A PLAY PERIOD
DCPLTI	LONG TERM LOAN INTEREST CHARGE
SUFF1	AMOUNT OF LONG TERM LOAN OUTSTANDING AT THE BEGINNING OF A PERIOD
TLNINT	ANNUAL LONG TERM LOAN INTEREST CHARGE EXPRESSED AS A DECIMAL PERCENTAGE
SEVTAX	AMOUNT OF EMERGENCY LOAN INTEREST CHARGE
TANOE	AMOUNT OF EMERGENCY LOAN OUTSTANDING AT THE BEGINNING OF A PERIOD
ELNINT	MONTHLY EMERGENCY LOAN INTEREST CHARGE EXPRESSED AS A DECIMAL PERCENTAGE
PD	NUMBER OF MONTHS REPRESENTED BY A PLAY PERIOD

FIGURE 3 - 8

Fixed and variable production costs. It has been anticipated that production costs will not necessarily be the same for different methods of production. Upon the establishment of the game parameters the administrator can designate 10 different production costs assignable to each of the types of production, (gas and oil with solution gas). Along with the assignment of production costs, the number of production methods involved in play must be specified.

Production cut-offs. It is the responsibility of participants to determine the economical cut-off for production. Production beyond this limit will result in an operating loss for a particular lease. In the simulation, production of a lease will continue until the lease is abandoned by the owning participant. In calculation of the liquidational value of a participant's holdings of unrecovered reserves economic cut-offs are assigned limiting unrealized production that is included. These cut-offs are expressed in barrels of oil and MCF of gas per day. Actual economic cut-off will vary with the cost of production, however, these parameters are average figures applicable to all production methods.

In actual practice, an operator engaged in gas production is restricted in production by a minimum delivery pressure to a transmission line. This too is included in the simulation as a pressure cut-off. Operators continuing to produce gas reservoirs after the producing pressure has dropped below this established minimum will not be credited with production, but will be subject to the assignable production costs. This restriction is pertinent to gas production and does not apply to oil production having a solution gas included. Inclusion of this feature is with the assumption

that gas compressors are not placed at production sites to raise gas pressure as may be required for entry into a transmission line. Should an administrator not desire to include these limitations in play, the value of each can be set to zero.

Percentage depletion parameters. Presently, percentage depletion applicable to petroleum production is computed as 27.5% of gross income, but in no case can this exceed 50% of the next taxable income.[38] Even though these parameters, the percentage of gross income and maximum depletion percentages, are fixed in reality, each has been included as game parameters.

Royalty. The production royalty payable the lessor by the lessee expressed as a decimal percentage of gross production.

Abandonment cost. Upon abandonment of a producing lease by participants, a dollar abandonment charge will be levied. This charge will be on a per well basis.

Random number generator parameters. The multiplier and multiplicant employed by the random number generator of the CONTROL PROGRAM are introduced as game parameters. The flow chart representing the methodology employed in the generation of random numbers is included in Appendix A.

Company overhead. The operation of a business enterprise generally involves the incurrence of indirect operational expenses. These expenses are

not directly allocable to any specific phase of operation. In the simulation indirect expenses are a function of the value of a company's gross petroleum production. This function has been designed as linear, with the slope and ordinate intercept established as game parameters. The method and mathematical model for the computation of overhead charges is presented in Figure 3-9.

Corporate tax rate. Participants electing corporate company structure will be subject to income taxation by the application of a corporate income tax rate to corporate earnings. The corporate tax percentage is a flat rate remaining constant regardless of a company's taxable income.

Severence tax rate. Petroleum production will be subject to a production or severence tax. This tax is a constant decimal percentage and is applied to the dollar value of a participant's simulated petroleum production.[39]

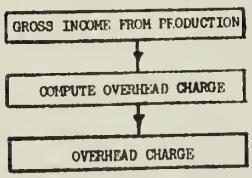
Lease purchase bonus multiple: The multiplier applied to the annual delay rental, pertinent to a specific lease, yielding the amount of bonus payment levied against a participant for a particular lease purchase.

VI. ADMINISTRATOR'S PLAY INPUT

General Description of the Administrator's Play Input

For each round of play including the pre-play period the administrator is required to supply a play

OVERHEAD CHARGE CALCULATIONS



CALCULATION OF OVERHEAD CHARGE

HOLD1(I) = FOVHB + (FOVHM X HOLD(I))

WHERE:

HOLD1(I)	COMPANY OVERHEAD CHARGE
FOVHB	FIXED PORTION OF THE OVERHEAD CHARGE
FOVHM	SLOPE OF THE LINEAR FUNCTION DEFINING THE OVERHEAD CHARGE
HOLD(I)	GROSS INCOME GENERATED FROM PRODUCTION

FIGURE 3 - 9

input to the CONTROL PROGRAM. This input will be composed of:

1. Play control data
2. Modifications to changable game parameters
3. Charges for engineering studies performed
4. New and modified production data
5. Additional undeveloped leases for sale in subsequent rounds of play
6. Transfers of interest for developed lease sales

Play Control Data

The play control data included as part of the administrator's play input serves as computer instruction pertinent to the reading of game parameters from the carry-over deck; modification of any of the changable parameters, if necessary; establishment of certain game parameters required in advance of the read-in of the play carry-over deck; and establishment of the duration of play. Specific information comprising the control data is:

1. Number of participants (remaining constant)
2. Length of play period in months
3. Tape drive unit number designation for the auxiliary tape driver to be used for data retention
4. Period identification number--sequential numbering from period to period commencing with zero for the pre-play period
5. Administrator's data indicator--signifying if game parameter changes are included in the input or if in the case of initial establishment of game parameters, computer instruction to read parameters entirely from the administrator's input rather than from the carry-over deck.

Changes in Game Parameters

An administrator desiring to modify any of the changable game parameters can do so by properly annotating the play control input and including desired changes in the administrator's play input.

Charges for Engineering Studies

The administrator will include in his play input a listing of charges for engineering studies performed, that are to be lodged against participants. The cost of the engineering studies will be entered individually into the CONTROL PROGRAM accompanied by the lease number on which the study was made; the player number requesting the performance of the study; and the study identification number.

A generally accepted practice is the capitalization of the cost of engineering studies as intangible assets, assignable to specific undeveloped leases. As such, these costs are expensed either by depletion upon production or written off as a loss should the lease be terminated without development.[40] This procedure is affected by the control program in its processing of charges for engineering studies.

Method for Retention and Entry of New or Modified Production Data

As a technique for the conservation of computer storage, all production data for leases are retained as part of the carry-over deck. In the computation of a period's production by the CONTROL PROGRAM, incremental production data is read from the carry-over deck until the prescribed number of days or production allowables have been reached.

In addition, production data, consisting of pressure during a production period, time duration of the

production increment, time rate of production, and gas oil-ratio if applicable, and sufficient other information is included for the performance of all accounting and revenue calculation functions. This data is processed for each round of play, adjusted as required, and punched out as part of the next period's carry-over deck. Included in the supplemental information is:

1. Production method
2. Depreciation method
3. Cost of original equipment
4. Purchase period of original tangible equipment
5. Equipment life
6. Book value of original equipment
7. Cost of auxiliary equipment assigned the lease
8. Auxiliary equipment life
9. Purchase period of auxiliary equipment
10. Book value of auxiliary equipment
11. Existing well bore pressure (synonymous with well head pressure in the simulation)
12. Recoverable reserves
13. Number of producing wells.
14. Lease number
15. Owner
16. Price code, for sale of production

The CONTROL PROGRAM has been constructed to receive new and modified production data and include this data as part of the carry-over deck. The technique used, consists of the inclusion of new or modified production data in the administrator's play input with its retention on magnetic tape. Once data processing has progressed to the computation of revenue from production, the information retained on the magnetic tapes is then inserted in the CONTROL PROGRAM in lease sequence. For

the modification of previously inserted production data, the original data is discarded after having been replaced by the modified information.

The participant is restricted to a single infill drilling of a lease, this limitation is circumscribed by the construction of the CONTROL PROGRAM. Dimensioning in the CONTROL PROGRAM has been limited to accomadate 100 productive leases and the possible subsequent infill drilling of each.

Should an administrator require additional production equipment to support changes in production methods, the original lease equipment can be supplemented by auxiliary equipment. With the exception of infill drilled leases, assignment of depreciable assets to a lease has been limited to the original and a one time addition of auxiliary equipment.

Infill drilling of a lease is processed as if the infill wells are on a separate lease, therefore the infill site is subject to the same restrictions. For example:

> Lease 12 is infill drilled with the addition of 20 wells to an original 20. Production data for the original 20 wells is modified for the infill drilling and the production data for the 20 infill wells is recorded as lease 112. In the overall play both sites, leases 12 and 112, may have an original and auxiliary equipment assignment.

Auxiliary equipment placed on a lease will be depreciated by the same method as designated for the original equipment on that lease.

Designation of Salable Leases

The game administrator will include in his play

input a listing of new undeveloped leases to be offered for sale. Leases entered during one round will not be available for purchase until the next round. This input will consist of the individual listing of leases by lease number, acreage, and annual delay rental per acre. At the end of each round participants will be supplied with a "lease sale report" advertising all undeveloped leases available for sale during the next round. This listing will consist of the administrators offering, all leases previously offered for sale and unpurchased, and any leases surrendered by participants or reverted because of the expiration of leases' primary terms.

In addition to undeveloped leases the game administrator or participants can arrange for the sale of developed properties. Transaction of these sales and their advertisement will be left to the design of the administrator. The sale of a lease by one participant to another, will be appropriately included in the administrators input and the CONTROL PROGRAM will accomplish all equity transfers. Developed leases sold by the administrator must have the properly annotated production data included in the new and modified production data input.

VII. SUPPLEMENTAL PLAY INFORMATION

General Description of Supplemental Play Information

In the execution of any simulation there is certain information necessary that must be transmitted to the game administrator and participants alike. The administrator must be informed of rules, procedures, and restrictions of the game and on the other hand the player must be given some idea of "what is going on."

Instructions for the game administrator are best disseminated by the use of an administrator's play manual. Participants can be supplied required information by a player hand-out and/or a pre-play critique; perferably both.

At the termination of play it is often beneficial to "de-brief" the players in a post play critique. A review of the game's play can prove educational to both the administrator and participant. From this critique the administrator can gain some insight as to the effectiveness of the simulation and of the game's shortcomings. In the case of the participant, a post-play critique will afford him the opportunity of reviewing his management approach with respect to that of others and the advantages of each.

Player's Informational Hand-out

A user of Pay Dirt should prepare and distribute a hand-out to participants setting forth regulations for play. In the course of a game, considerable involvement may result among players. This hand-out could serve as a starting point for enthusiasm if the stage is properly set for the business venture that the participants are about to undertake.

Administrator's Play Manual

As Pay Dirt is designed to be tailored to the specific goals of a user, no administrator's manual will be presented. A listing of game parameters that must be established by the game administrator and instructions for the preparation of these for input into the CONTROL PROGRAM are included in Appendix B. Contents of this chapter and the appendices of this text contain adequate information for the administration

of play. Editing of a concise administrator's manual will prove beneficial if continued use of the simulation, conforming to the same scheme of play, but with different administrators, is anticipated by a user.

Player's Pre-Play Critique

Introduction of Pay Dirt to participants should be made by a pre-play critique. This session is designated for the presentation of the rules of play and divulgence of game parameters as an administrator may deem appropriate. In this regard the simulation has not been designed to be a mysterious puzzle, but an instructional device. Presentation of parameters and their affects on play, might serve to erase any thoughts of a "hocus pocus" operation from the minds of contenders.

Post Play Critique

Depending on administration, the post play critique should prove to be a beneficial aspect of the simulation. In the progress of play, sufficient reports are supplied the game administrator, reflecting the participant's decisions and their effects. Play can be "re-hashed" during the post play critique and any academic misconceptions eliminated.

A user of the simulation is to be cautioned in regard to his attitude employed in the critiquing of play--criticism should be constructive rather than destructive, and tailored to the academic and professional development of participants. Exercise of proper judgement regarding the game's "post mortum" is mandatory. Players could become irritated or even insulted if discussions are not controlled and harassment of players by either the administrator or other participants could nullify and instructional benefit which is to be realized from play.

FOOTNOTES

Chapter III

1. Harry G. Guthmann and Herbert E. Dougall, Corporate Financial Policy (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963), p. 5.

2. A limited presentation of the magnitudes of incorporation and annual franchise taxes can be found in Corporate Financial Policy, pp. 33-34.

3. Samuel A. Dyckman and others, Federal Tax Course (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1965), p. 3146.

4. For a discussion of the characteristics of corporate and proprietary organizations refer to Corporate Financial Policy, pp. 5-29.

5. Harold Bierman, Jr. and Seymour Smidt, The Capital Budgeting Decision (New York: The Macmillan Co., 1964), p. 3.

6. Robert L. Masson, Pearson Hunt, and Robert N. Anthony, Cases in Financial Management (Homewood, Ill.: Richard D. Irwin, Inc., 1960), p. 5.

7. Guthmann, op. cit., pp. 446-449.

8. Ibid., p. 479.

9. Louis O. Foster, Understanding Financial Statements and Corporate Annual Reports (Philadelphia and New York: Chilton Co., 1962), pp. 95-123.

10. Guthmann, op. cit., pp. 361-364.

11. Ezra Soloman (ed.), The Management of Corporate Capital (Glencoe, Ill.: The Free Press of Glencoe, 1959), p. 155.

12. Foster, op. cit., pp. 82-83.

13. Robert E. Sullivan, Handbook of Oil and Gas Law (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961), pp. 500-501.

14. Detailed discussions of the habendum and delay rental clauses are contained in Handbook of Oil and Gas Law, pp. 95-123.

15. Primary term as specified by a lease's habendum clause; the duration of a lease unless the lease is developed.

16. W. A. Paton and A. C. Littleton, An Introduction to Corporate Accounting Standards (Madison, Wis.: American Accounting Association, 1962), p. 69.

17. Robert N. Anthony, Management Accounting (Homewood, Ill.: Richard O. Irwin, 1964), p. 156.

18. Norman N. Barish, Economic Analysis (New York: McGraw-Hill Book Co., Inc., 1962), p. 73.

19. Dyckman, op. cit., p. 2008.

20. For a brief, but relatively comprehensive presentation of depreciation consult Management Accounting, pp. 156-162.

21. Dyckman, op. cit., p. 2100.

22. Barish, op. cit., p. 90.

23. Sullivan, op. cit., p. 109.

24. A concise discussion of depletion is contained in Oil Property Evaluation, pp. 100-102.

25. Sullivan, op. cit., p. 499.

26. Dyckman, loc. cit.

27. Sullivan, op. cit., p. 495.

28. Ibid., p. 109.

29. Ibid., p. 194.

30. For a delineation of an owner's abandonment responsibilities refer to Handbook of Oil and Gas Law, pp. 285-335.

31. Allowables and other conservation measures are contained in Handbook of Oil and Gas Law, pp. 285-335.

32. John M. Campbell, Oil Property Evaluation (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1959), p. 33.

33. Sullivan, op. cit., p. 95.

34. Dyckman, op. cit., p. 1109.

35. A comprehensive discussion of the present value concept is contained in The Capital Budgeting Decision, pp. 23-62.

36. Dyckman, op. cit., pp. 2104-2105.

37. Sullivan, op. cit., p. 490.

CHAPTER IV

SUGGESTED FUTURE DEVELOPMENT OF PAY DIRT

I. CONTROL PROGRAM

Few, if any, management games are complete in their original design. Creators in many instances devote many years and countless hours to the refinement of game features in an attempt to better replicate reality. Unfortunately, some game designers have a tendency to over complicate simulations through their search for the refinements. Experience gained from the play of management games at Tulane University indicated that simple games based on entirely ficticious industries taught more than complex simulation burying the player in realistic, but trivial detail.[1]

Without the risk of introducing trivia into Pay Dirt certain additions could be added to the CONTROL PROGRAM transforming the game from that of a functional to a total enterprise type. Incorporation of transportation and marketing into the simulation would round out Pay Dirt as a total enterprise management game.

Transportation

In the operation of petroleum producing companies, transportation is a major consideration because of its effect on production and selling price. This feature of management could be included in Pay Dirt by incorporating any or all of the following ideas:

1. Election by participants of the method for product transportation. The options could include truck or pipe transportation.

2. Participant's selecting truck transportation could be offered opportunities to buy, lease, or contract for trucking facilities at varying prices for each.
3. Include the distance of leases from the nearest pipeline facility, thereby introducing a distance dependent transportation cost.
4. In addition to other production restrictions included in the simulation, subject participants to pipeline proration.

Marketing

In petroleum production, and especially for gas, market demand controls selling price. This facet of operational planning by a producer is apropos for inclusion in the game. Depending on the marketing function and a random input, selling price could be established during play. Another suggestion applicable to gas production would be the adoption of "take or pay" type contracts. Players could be offered gas production contracts with varying minimum takes, with the sale price of the product determined as a function of the stipulated minimum.

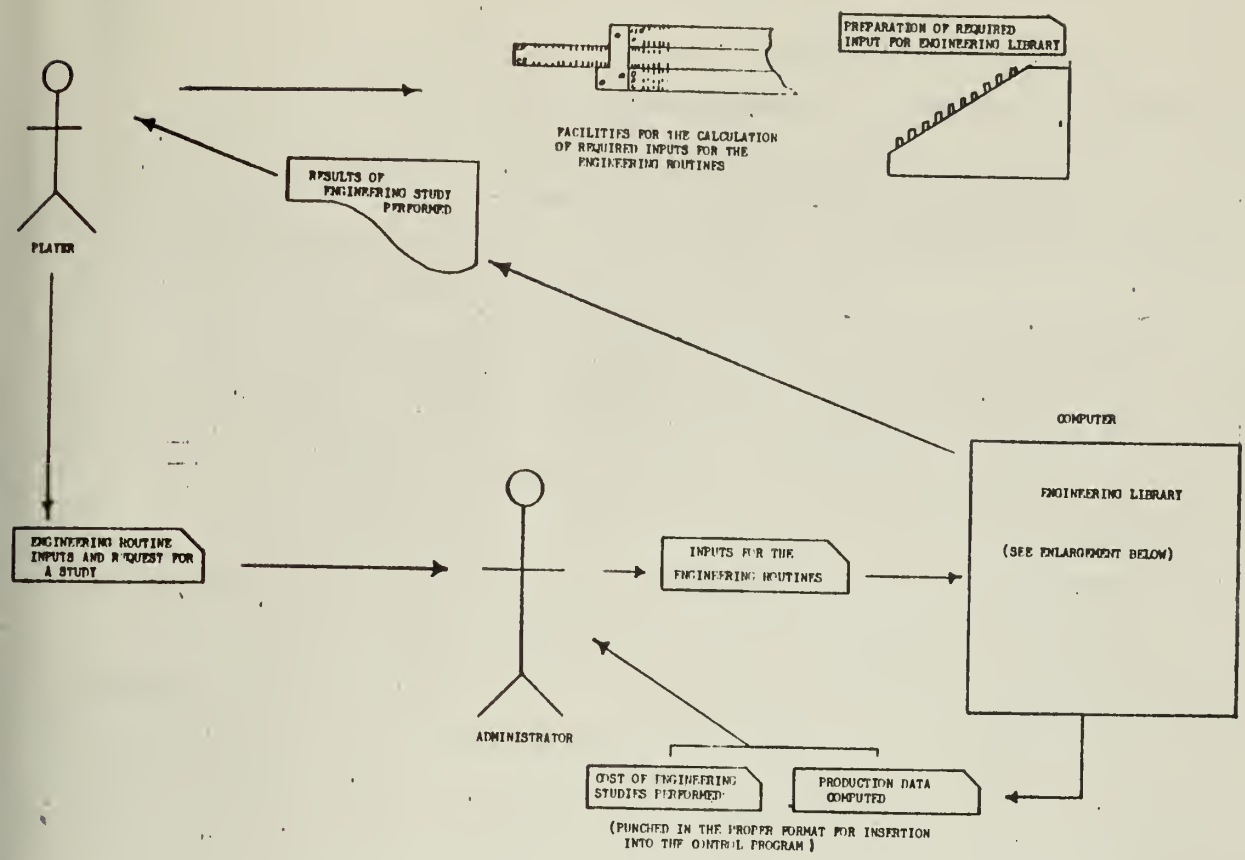
II. ENGINEERING PHASE

Development of the engineering phase of Pay Dirt and its use by participants is an important aspect of the game's play. The author envisions the engineering library and its employment to conform to the pictorial representation presented in Figure 4-1.

Suggestions for the design of the engineering phase include:

1. Creation of an atmosphere of realism in the offering of leases for sale and in pre-development operations.

PICTORIAL PRESENTATION OF ENGINEERING PHASE


PREPARATION OF REQUIRED INPUT FOR ENGINEERING LIBRARY
FACILITIES FOR THE CALCULATION OF REQUIRED INPUTS FOR THE ENGINEERING ROUTINES
PLAYER
RESULTS OF ENGINEERING STUDY PERFORMED
COMPUTER
ENGINEERING LIBRARY
(SEE ENLARGEMENT BELOW)
ENGINEERING ROUTINE INPUTS AND REQUEST FOR A STUDY
INPUTS FOR THE ENGINEERING ROUTINES
ADMINISTRATOR
COST OF ENGINEERING STUDIES PERFORMED
PRODUCTION DATA COMPUTED
(PUNCHED IN THE PROPER FORMAT FOR INSERTION INTO THE CONTROL PROGRAM)

COMPUTERIZED ENGINEERING LIBRARY OF ENGINEERING ROUTINES

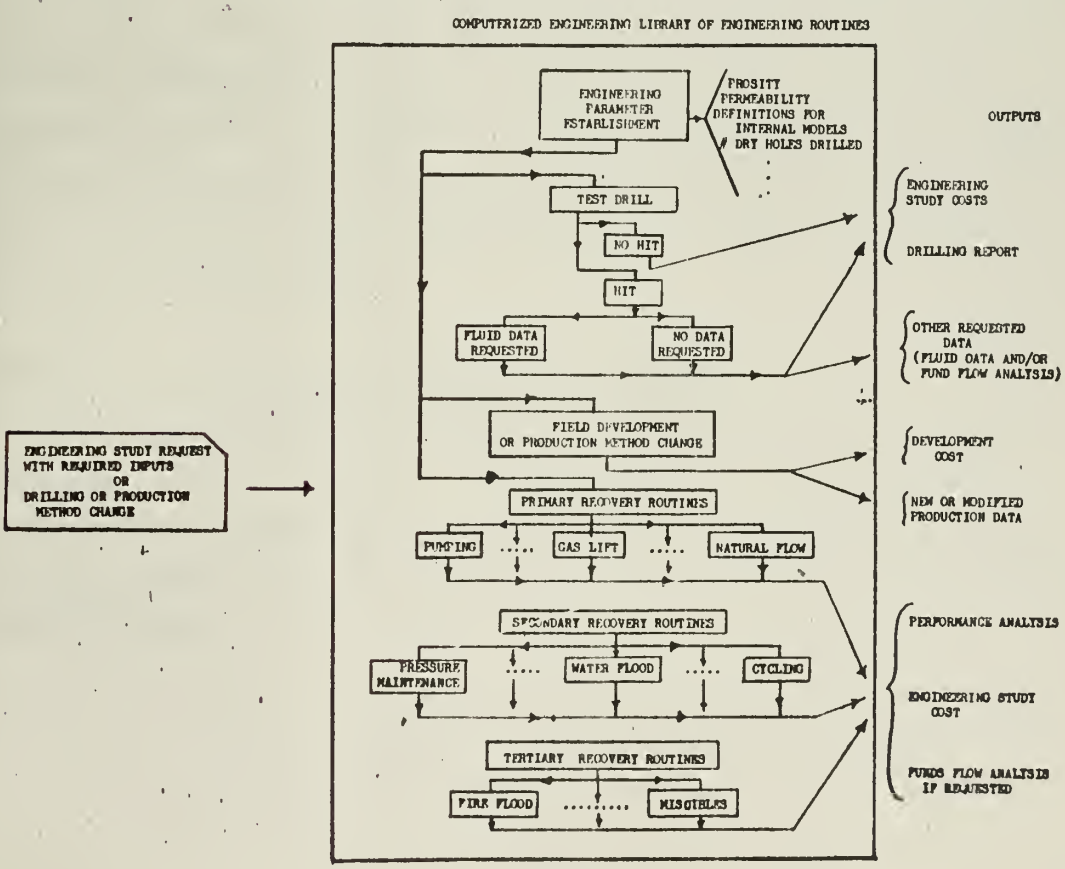


FIGURE 4 - 1

2. Development of engineering routines usable by participants during play to generate engineering data from which financial decisions are made.
3. Design of routines to generate engineering parameters for production performance calculations and establishment of drilling
4. Incorporation of versitility in the design of the various routines such that part of the administrator's CONTROL PROGRAM input can be prepared automatically by the computer.

Creation of Realism for Lease Purchase and Development

In the presentation of leases offered for sale, thought might be given to a map representation. Maps could include such items as lease location, grouping of leases into field arrangements, pipeline locations, and indication of other undeveloped and developed leases owned by other participants. An even more elaborate arrangement would be the use of a sand board. This could include terrain features as well as the forementioned items. "Advertisement" of leases for sale could be accomplished by descriptions of the geological features of the area and pertinent legal restrictions that would influence drilling operations.

Engineering Routines for Use by Players

The representation of the engineering library in Figure 4-1 is a resume of the author's thoughts for a few of the engineering routines that should be available to players. Participants would be offered an opportunity to perform:

1. Test drilling and an analysis of data received
2. Investigation of lease performance under various methods of primary recovery and secondary recovery

3. Evaluations of recovery on leases tertiary recovery methods

Administration of these routines should require that players exercise petroleum engineering judgement before results can be obtained. One approach to this would be that of structuring the reservoir characteristics such that the prudent and wise participant would need to make a computer analysis of the available data before financial decisions would be formulated.

Whenever players generate or select inputs for the engineering library programs, errors could be introduced in the computer calculations performed. In the design of the engineering routines provisions should be made to protect the logic of the game and the engineering programs against computational errors. Steps such as the following should be considered:

1. Perform computer calculation in accordance with the input data, thereby compiling erroneous results and distribute these to the player.
2. Build into each routine allowable error tolerance; inputs included within a specific range being accepted thereby giving accepted calculations; inputs not within the specified tolerances would cause this phase of play for a participant to be terminated with an appropriate error message. Variable tolerances could be used and their values established consistent with the abilities of the players.

Provision should be made to provide the CONTROL PROGRAM with the true performance of wells and/or leases. All reservoir performance would then be determined by the true behavior even though the engineer has calculated the performance incorrectly.

Routines for Determination of Engineering Parameters and Drilling Results

In the performance of engineering analysis and calculations of well performance values of some engineering parameters could be generated by the use of computer routines designed for this purpose. Some of these include:

1. Permeability and permeability variability
2. Porosity and fluid saturations
3. Coefficients for general models of PVT curves required for calculations
4. API Gravity of oil and gravity of gas

Generation of these values could be accomplished by the creation of statistical distributions based on actual statistical studies, if such are available. Selection of values would be made by the use of random numbers applied to these distributions. In this regard care should be exercised to insure that the values assigned these parameters for leases grouped into field arrangements are realistically uniform. Additionally, in the selection of values for coefficients of property functions, care should be exercised to prevent unrealistic results from being obtained.

Parameters that are not desired to be developed by computer routines can be selected before commencement of game play.

In addition to the generation of engineering parameters, routines should be developed to create drilling results. This could be accomplished in a manner similar to that described for the engineering parameters. Consideration might be given to the generation of the following items using computer routines.

1. Number of dry holes drilled during initial lease development

2. Well depth, pay zone thickness, and number of pay zones
3. Discovery pressure and temperature
4. Results from zone production tests including initial production rates, gas-oil ratios, and rate of pressure decline in well.

Computation and Preparation of Production Data and Charges for Engineering Studies Required by the CONTROL PROGRAM

These engineering routines for calculation of performance data should be so designed that the data are created in a form directly acceptable by the CONTROL PROGRAM. This feature should include the punching of data cards that could be used as a part of the administrator's input for the CONTROL PROGRAM. Key punch requirements would thereby be reduced and the administrator's labor lessened.

1. Proceedings of the Conference on Business Games As Teaching Devices (New Orleans: Tulane University, 1961), p. 18

CHAPTER V

SUMMARY AND RECOMMENDATIONS

In this thesis the development and uses of management games as instructional devices have been investigated. Along with this, the various types, construction, and characteristics of management games have been presented. Finally, a management game has been structured with the principles of its operation and instructions for its play included as part of the thesis.

The game created by the author, Pay Dirt, is designed to simulate the management of independent petroleum producing companies. Pay Dirt is a generalized functional management game. As such it does not simulate any specific company operation or include all of the managerial responsibilities of an independent petroleum producing company. It has been developed around players requesting and interpreting engineering studies to be made on producing and/or prospective producing petroleum leases. From these studies at each round of play, the players make financial decisions. All business transactions and report generation in the game is performed by a computerized CONTROL PROGRAM. It is intended that an engineering library consisting of various computer routines designed to determine drilling results and compute well performance data under various methods of production. This library of programs is to be available and is to be used by the players during each round of play.

Pay Dirt has been completed to the extent that the CONTROL PROGRAM has been developed and flow charted. Its final preparation for computer execution has not been accomplished. Even though the author's thoughts for the creation of the engineering library are included in this text, its design has not been completed. If a game administrator wishes to provide engineering data to the

participants the game can be used in its present form to test only the financial judgement of the players.

In addition to the creation of a suitable engineering library, the author recommends that his work be continued and additional managerial features incorporated into the CONTROL PROGRAM, thereby transforming it into a total enterprise type simulation.

In its finished state Pay Dirt will prove to be an instructional device that could be beneficial to the business as well as engineering student. The author sincerely believes that development of the simulation should be continued and that the game ultimately will find extensive use for pedagogical purposes.

APPENDICES

APPENDIX A

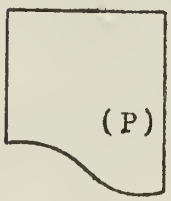
FLOW CHARTS OF PAY DIRT'S CONTROL PROGRAM

LEGEND OF SYMBOLS USED IN FLOW CHARTS

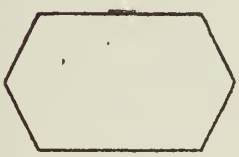
READ

OPERATION
(COMPUTATION, DO,
SUBSTITUTION, ETC.)

WRITTEN OUTPUT



PUNCHED OUTPUT

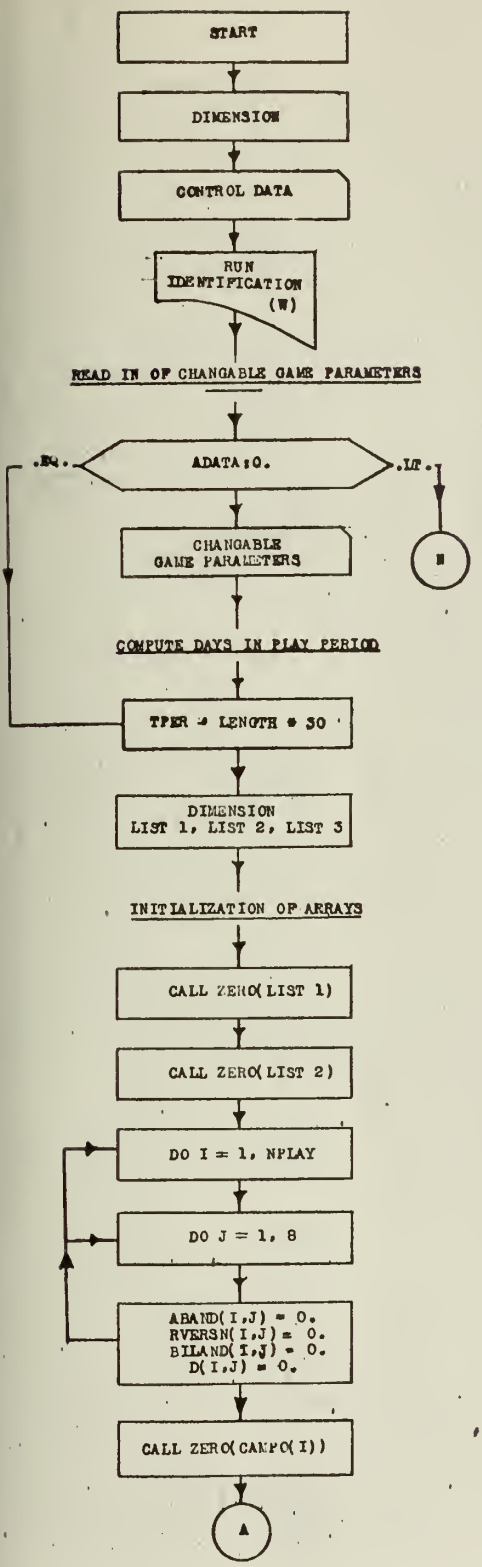


"IF" OR COMPUTED "GO TO"

CONTINUATION
(FROM A TO A)

NOTE:

ONCE DEFINED A VARIABLE WILL NOT BE REDEFINED UNLESS THE VARIABLE IS ASSIGNED A DIFFERENT MEANING



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

GAME CONTROL INPUT

NPLAY	NUMBER OF PLAYERS (NOT TO EXCEED 5)
LENGTH	MONTHS IN PLAY PERIOD
I1	DESIGNATION OF TAPE DRIVE UNIT FOR RETENTION OF NEW AND MODIFIED PRODUCTION DATA
PERIOD	SEQUENTIAL NUMBERING OF PLAY PERIOD(COMMENCING WITH ZERO)
ADATA	INDICATOR FOR CHANGE IN GAME PARAMETERS -1. CHANGES TO CHANGABLE GAME PARAMETERS 0. NO CHANGES 1. INITIAL ESTABLISHMENT OF GAME PARAMETERS

CHANGABLE GAME PARAMETERS

GPRICE(5)	SALE PRICE OF GAS PRODUCTION FOR GAS WELLS(5 VALUES REQUIRED)
OPRICE(5)	SALE PRICE OF OIL AND SOLUTION GAS PRODUCTION FOR OIL WELLS (5 VALUES REQUIRED)
GASALW	GAS PRODUCTION ALLOWABLE
OILALW	OIL PRODUCTION ALLOWABLE
GORALW	GAS-OIL RATIO ALLOWABLE

COMPUTATION OF DAYS IN PLAY PERIOD

TPER	DAYS IN PLAY PERIOD

DIMENSION

LIST 1

DPLETD(100)	DEPLETION METHODS FOR PRODUCING LEASES (SET TO 1.)
RENT(100)	PERIOD OF LEASE PURCHASE (SET TO 1.)
OWNER(100)	LEASE OWNERS

LIST 2

LEGAL(5)	RETENTION OF MONITARY AMOUNT OF PENALTIES LEVIED AGAINST PARTICIPANTS
ENGEXP(5)	RETENTION OF CHARGES FOR ENGINEERING STUDIES
SLOAN(5)	SHORT TERM LOANS REQUESTED BY PARTICIPANTS
TLOAN(5)	LONG TERM LOANS REQUESTED BY PARTICIPANTS
STOCK(5)	SALE OF STOCK REQUESTED BY PARTICIPANTS
SECURE(5)	PURCHASES OF SHORT TERM SECURITIES REQUESTED BY PARTICIPANTS
EXCESS(5)	SALE OF EXCESS EQUIPMENT REQUESTED BY PARTICIPANTS
CASH(5)	CASH ACCOUNT OF PARTICIPANTS

LIST 3

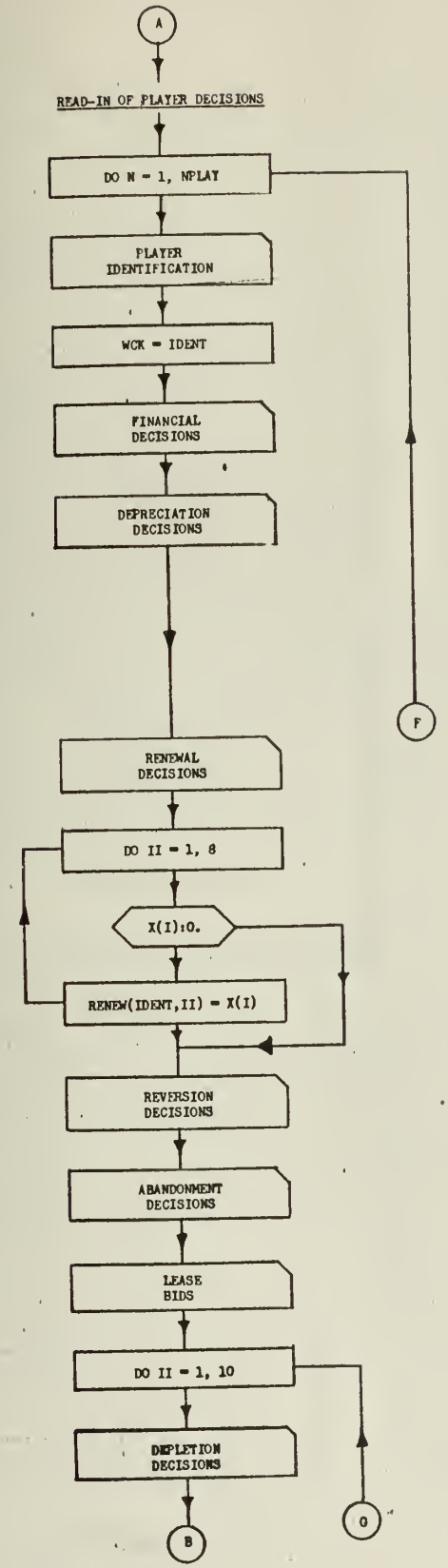
BILAND(5,8)	HOLDING ARRAY FOR BIDS FOR LEASE PURCHASES MADE BY PARTICIPANTS
ABAND(5,8)	RETENTION OF PARTICIPANTS' LEASE ABANDONMENT REQUESTS
RVERSN(5,8)	RETENTION OF PARTICIPANTS' LEASE REVERSION REQUESTS
D(5,8)	RETENTION OF REQUESTS FOR CHANGE IN DEPRECIATION METHODS OF PARTICIPANTS
CAMPO(100)	LEASE STATUS (SOLD, ABANDONED, ETC.)

INSTRUCTION

GAS PRICES ARE QUOTED AS PER MCF AND LISTED ON THE INPUT AS SPECIFIED. ENTRY OF OIL PRICES IS ACCOMPLISHED BY THE CONSTRUCTION OF EACH ENTRY AS FOLLOWS:

PRICE PER BBL + SALE PRICE OF SOLUTION GAS IN MCF / 1000.

* THE PER BBL PRICE OF OIL IS RESTRICTED TO $9999.99 AND GAS TO $9.99 WITH ALL PRICES EXPRESSED IN WHOLE CENTS



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

PLAYER IDENTIFICATION

IDENT	PLAYER IDENTIFICATION NUMBER
WCK	INTERNAL VARIABLE USED TO TRANSPOSE IDENT TO FLOATING POINT

FINANCIAL DECISIONS

SLOAN(5)	SHORT TERM LOAN REQUEST OR REPAYMENT DESIRED
TLOAN(5)	LONG TERM LOAN REQUEST OR REPAYMENT DESIRED
STOCK(5)	STOCK SALE OR PURCHASE
SECURE(5)	PURCHASE OR SALE OF SHORT TERM SECURITIES
EXCESS(5)	SALE OF EXCESS EQUIPMENT

INSTRUCTION — INDICATION OF A MINUS VALUE FOR ANY OF THE FINANCIAL DECISIONS VARIABLES SIGNIFIES:

SLOAN	LOAN REPAYMENT
TLOAN	LOAN REPAYMENT
STOCK	STOCK PURCHASE
SECURE	SHORT TERM SECURITY SALE

DEPRECIATION DECISIONS

D(5,8) — ARRAY CONTAINING REQUESTS FOR CHANGES IN DEPRECIATION METHODS

EQUIPMENT RENEWAL DECISIONS

RENEW(5,8) — ARRAY CONTAINING REQUESTS FOR EQUIPMENT RENEWAL

INSTRUCTION

RENEWAL ENTRIES ARE CONSTRUCTED AS FOLLOWS:

LEASE NUMBER + SUFFIX / 10.

WHERE SUFFIX EQUALS:

1. ORIGINAL PRODUCTION EQUIPMENT RENEWAL
2. AUXILLARY EQUIPMENT RENEWAL
3. RENEWAL OF BOTH ORIGINAL PRODUCTION EQUIPMENT AND AUXILLARY EQUIPMENT

REVERSION DECISIONS

RVERSN(5,8) — ARRAY FOR RETENTION OF LEASE REVERSION DECISIONS

ABANDONMENT DECISIONS

ABAND(5,8) — ARRAY FOR RETENTION OF LEASE NUMBERS TO BE ABANDONED

LEASE PURCHASE DECISIONS

BILAND(5,8) — ARRAY FOR THE RETENTION OF LEASE NUMBERS AND DELAY RENTAL BIDS FOR LEASE PURCHASES

INSTRUCTION

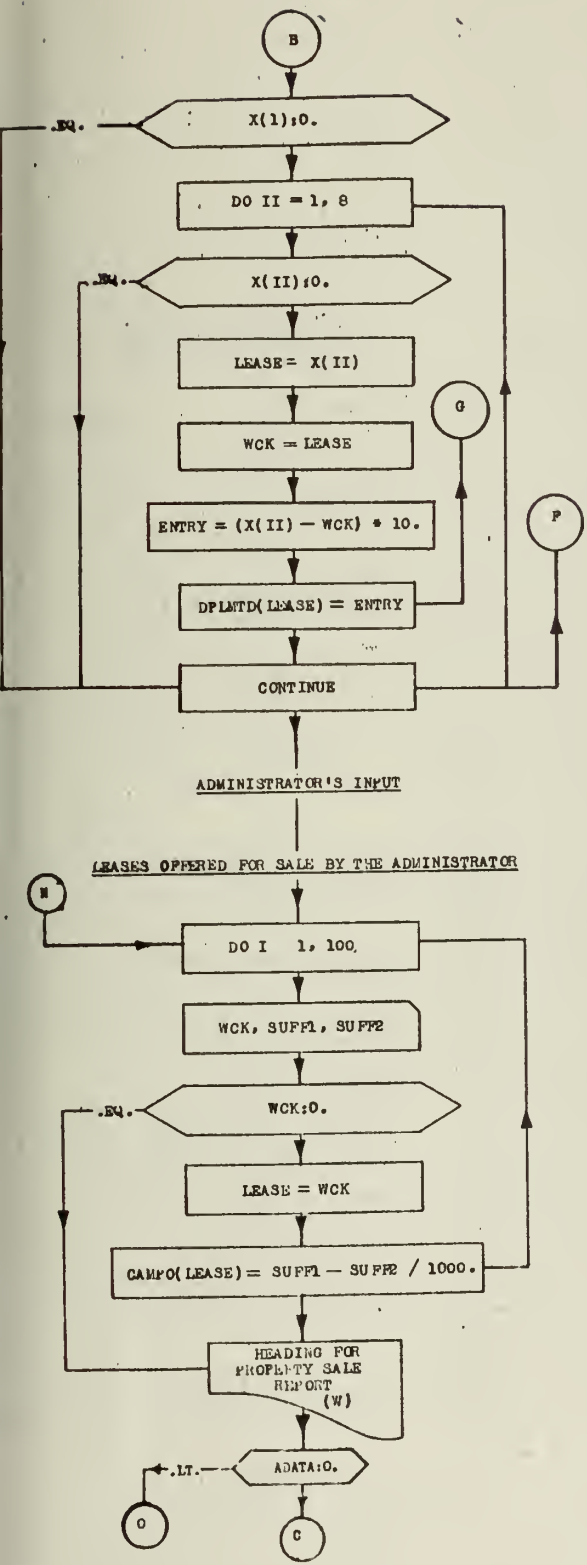
CONSTRUCTION OF LEASE PURCHASE ENTRIES:

LEASE NUMBER + DELAY RENTAL BID / 1000.

(DELAY RENTAL BIDS ARE RESTRICTED TO $999.99)

LEASE DEPLETION ALLOWANCE DECISIONS

X(8) — AUXILLARY ARRAY USED TO RECORD DEPLETION METHODS UNTIL TRANSFER TO THE DEPLMTD ARRAY



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

DEPLETION DESIGNATION CONTINUATION

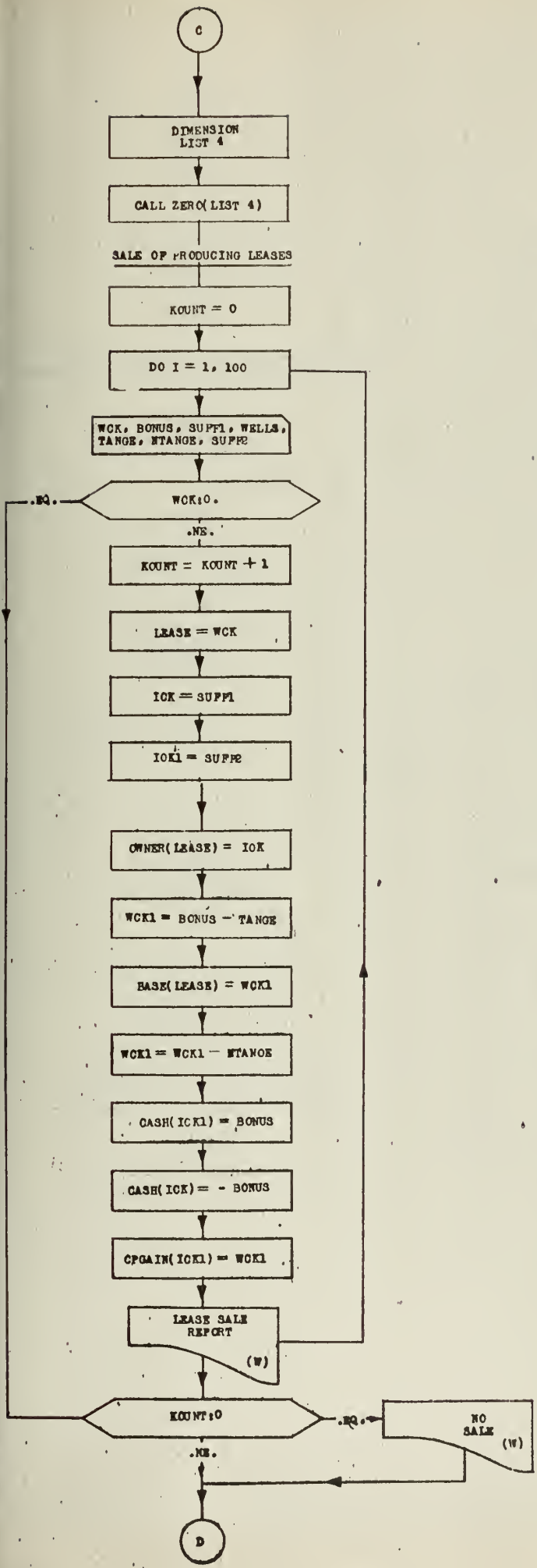
LEASE	LEASE NUMBER
WCK	VARIABLE USED FOR THE TRANSPOSITION OF LEASE FROM FIXED TO FLOATING POINT
ENTRY	INTERNAL VARIABLE USED FOR THE ENTRY OF THE DEPLETION METHOD INTO STORAGE
INSTRUCTION	EACH PARTICIPANT'S INPUT MUST END WITH A BLANK CARD
INFORMATION	FORM OF DATA INPUT FOR DEPLETION METHOD: LEASE NUMBER DEPLETION METHOD / 10.

DEPLETION METHOD INDICATORS

1. SIONIFIES COST DEPLETION
2. SIONIFIES PERCENTAGE DEPLETION

LEASES OFFERED FOR SALE BY THE ADMINISTRATOR

WCK	LEASE NUMBER
SUFF1	LEASE ACREAOE
SUFF2	LEASE DELAY RENTAL CHAROE
CAMPO(I)	STORAGE ARRAY FOR DATA PERTINENT TO SPECIFIC LEASES
INSTRUCTION	LEASE DELAY RENTAL CHAROE IS RESTRICTED TO $ 999. / ACRE AND MUST BE IN WHOLE DOLLARS
INFORMATION	CONSTRUCTION OF LEASE DATA FOR STORAGE: LEASE ACREAOE DELAY RENTAL PER ACRE / 1000.



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

LIST 4

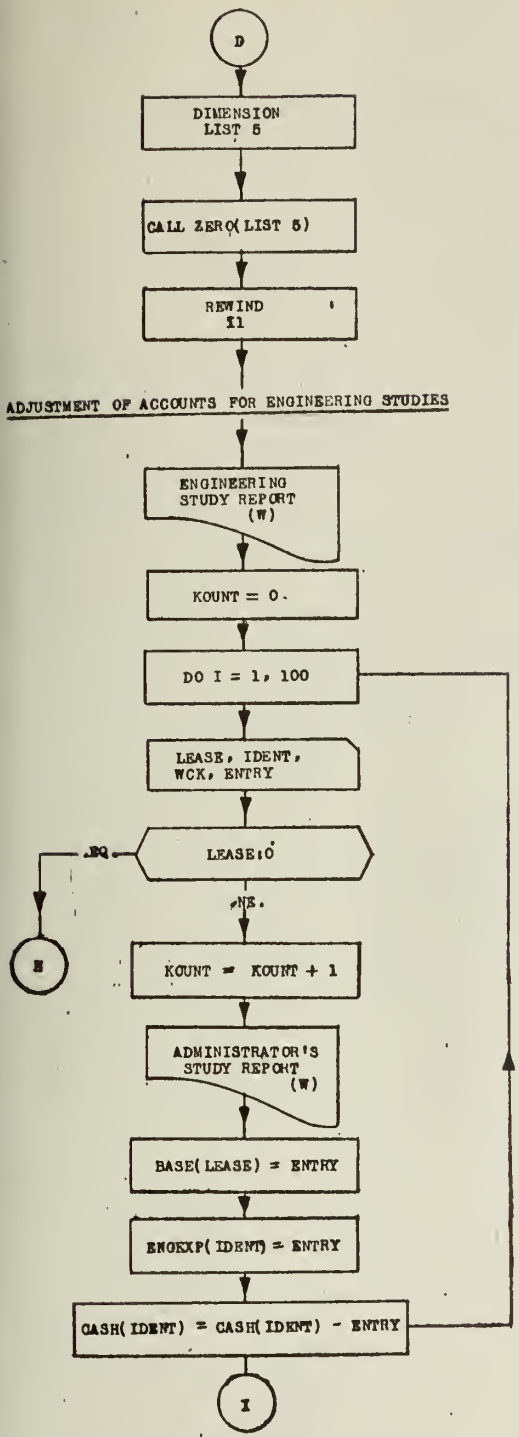
BASE(100)	RETENTION ARRAY FOR INTANGIBLE ASSETS ASSIGNED TO SPECIFIC LEASES
CPGAIN(5)	RETENTION ARRAY FOR LONG TERM CAPITAL GAINS OF PARTICIPANTS

SALE OF PRODUCING LEASES

WCK	LEASE NUMBER
BONUS	SALE PRICE OF LEASE
SUFF1	LEASE BUYER
WELLS	NUMBER OF WELLS ON LEASE
TANGE	BOOK VALUE OF TANGIBLE ASSETS ASSIGNED THE LEASE
NTANGE	NON-EXPENSED INTANGIBLE ASSETS ASSIGNED THE LEASE
SUFF2	LEASE SELLER
ICK	INTERNAL VARIABLE FOR TRANSPOSITION OF SUFF1 TO FIXED POINT
ICK1	INTERNAL VARIABLE FOR TRANSPOSITION OF SUFF2 TO FIXED POINT
WCK1	INTERNAL VARIABLE USED FOR THE CALCULATION OF CAPITAL GAINS

SALE OF PRODUCING PROPERTY REPORT

LEASE	NUMBER OF THE LEASE SOLD
ICK	LEASE BUYER
ICK1	LEASE SELLER
BONUS	SALE PRICE
WELLS	NUMBER OF PRODUCING WELLS ON THE LEASE



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

LIST 5

U(10)
V(10)
W(10)
X(10)
Y(10)
Z(10)
HOLD(10)
HOLD1(10)

REWIND

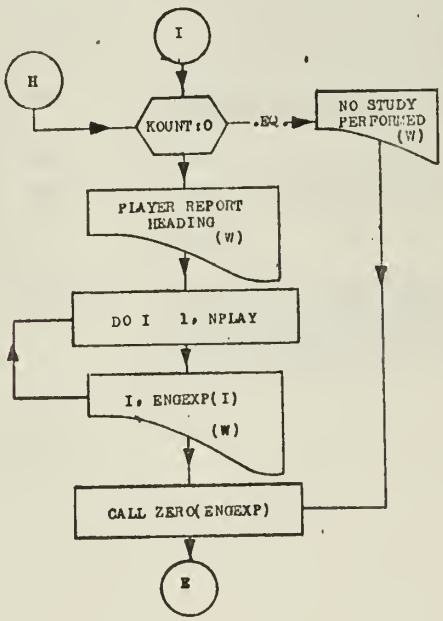
I1	TAPE DRIVE NUMBER OR DESIGNATION TO BE USED FOR THE RETENTION OF NEW AND MODIFIED PRODUCTION DATA

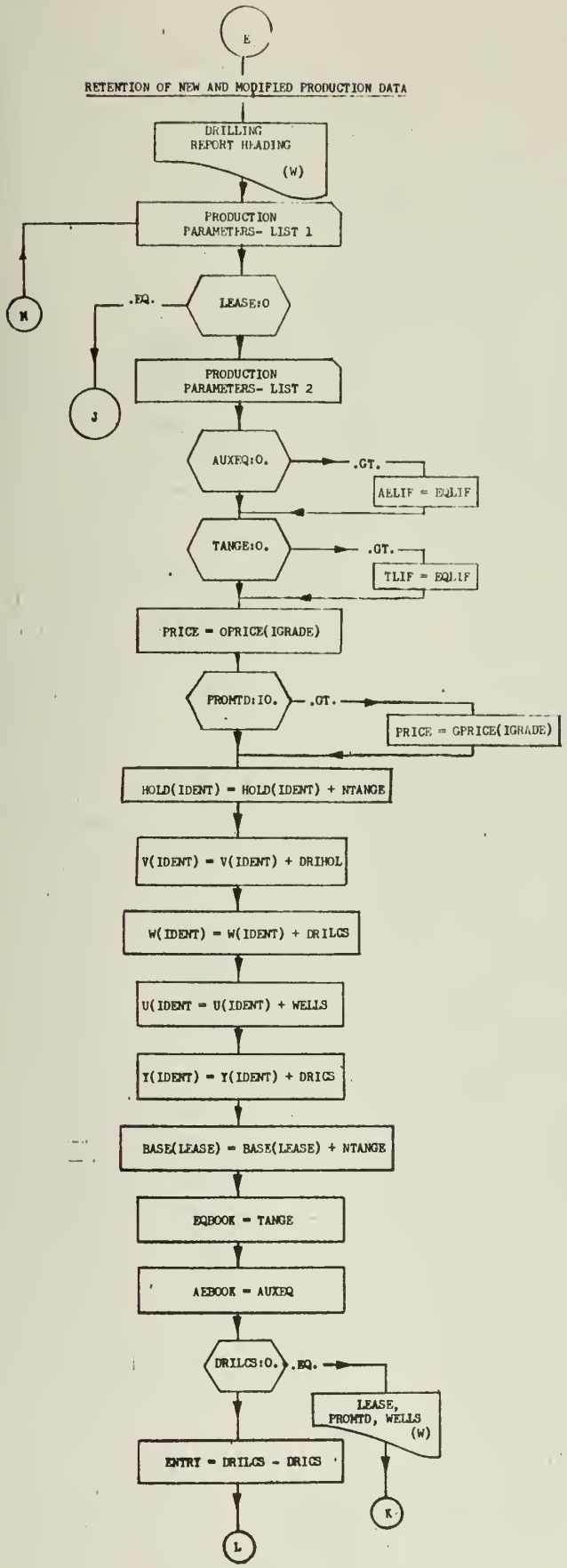
ADJUSTMENT OF ACCOUNTS FOR ENGINEERING STUDIES

REPORT HEADING	HEADING FOR THE ADMINISTRATOR'S REPORT OF ENGINEERING STUDIES PERFORMED
KOUNT	INTERNAL VARIABLE USED AS A COUNTER

ENGINEERING STUDY DATA

LEASE	LEASE NUMBER ON WHICH THE STUDY WAS MADE
IDENT	PLAYER NUMBER REQUESTING THE ENGINEERING STUDY
WCK	NUMERICAL DESIGNATION OF THE STUDY PERFORMED
ENTRY	CHARGABLE COST FOR THE ENGINEERING STUDY





FLOW CHART NOMENCLATURE AND INSTRUCTIONS

PRODUCTION PARAMETERS

LIST 1

LEASE	LEASE NUMBER
TANGE	DEPRECIABLE EQUIPMENT ASSIGNED TO THE LEASE
NTANGE	INTANGIBLE ASSETS ASSIGNED TO THE LEASE
DRILCS	TOTAL DRILLING AND EQUIPMENT COST INCLUDING THE COST OF DRILLING ATTRIBUTABLE TO DRY HOLES
DRICS	COST ATTRIBUTABLE TO DRILLING DRY HOLES
IDENT	LEASE OWNER
N	NUMBER OF PRODUCTION INCREMENTS

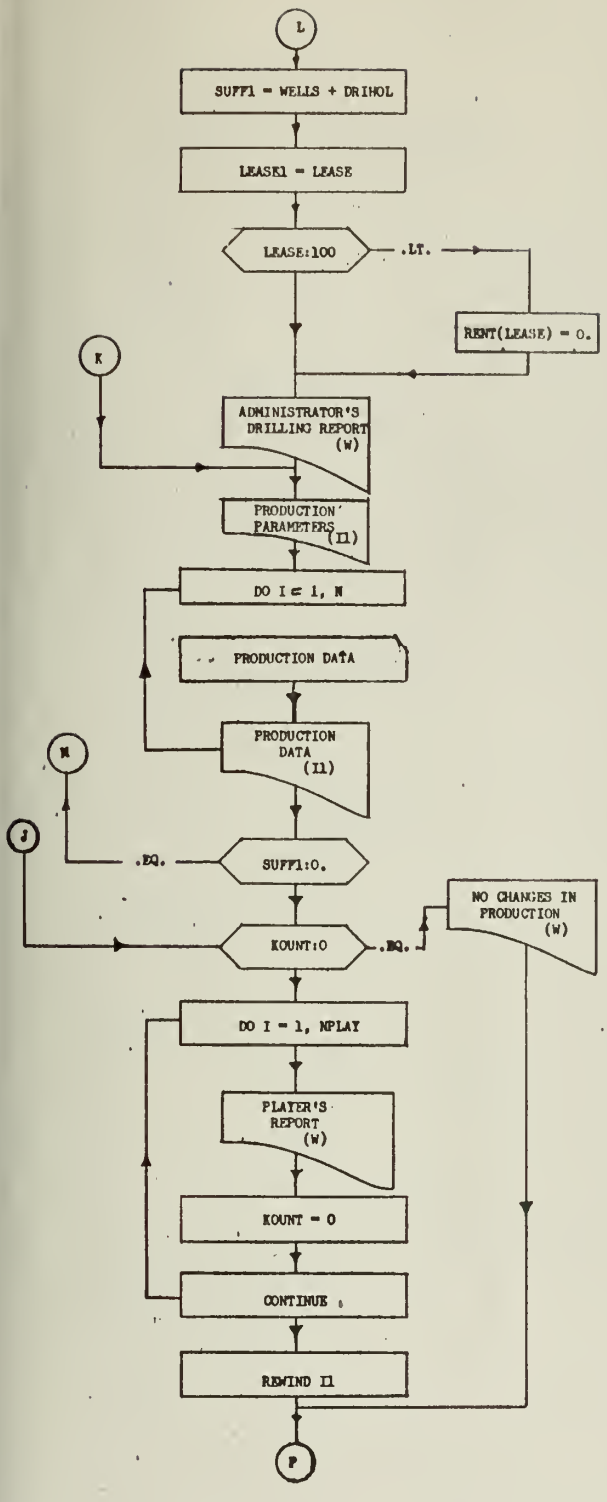
LIST 2

DRIHOL	NUMBER OF DRY HOLES
AUXEQ	AUXILLARY EQUIPMENT ASSIGNED TO THE LEASE (FOR CHANGES IN PRODUCTION METHODS ONLY)
EQLIF	ASSIGNED EQUIPMENT LIFE OF EITHER ORIGINAL EQUIPMENT OR AUXILLARY EQUIPMENT
WELLS	NUMBER OF PRODUCING WELLS
PROMTD	PRODUCTION METHOD IN USE
IGRADE	GRADE OF OIL OR GAS BEING PRODUCED
RESEVE	RECOVERABLE RESERVES ASSIGNED THE LEASE

OTHER VARIABLES

KOUNT	INTERNAL VARIABLE USED AS A COUNTER
HOLD(IDENT)	TOTAL INTANGIBLE ASSETS ASSIGNED LEASES DURING THE ROUND FOR EACH PARTICIPANT
V(IDENT)	TOTAL NUMBER OF DRY HOLES DRILLED DURING THE ROUNG FOR EACH PARTICIPANT
W(IDENT)	TOTAL DRILLING COSTS INCURRED BY EACH PARTICIPANT DURING A ROUND
U(IDENT)	TOTAL NUMBER OF PRODUCING WELLS DRILLED DURING A PERIOD BY EACH PARTICIPANT
Y(IDENT)	COST OF DRY HOLES DRILLED BY EACH PARTICIPANT
EQBOOK	BOOK VALUE OF EQUIPMENT (TANGIBLE ASSETS) ASSIGNED A LEASE (ORIGINAL PRODUCTION EQUIPMENT ONLY)
AEBOOK	BOOK VALUE OF AUXILLARY EQUIPMENT ASSIGNED A LEASE (EQUIPMENT ASSIGNED REQUIRED FOR A CHANGE IN PRODUCTION METHOD)
AELIF	ASSIGNED LIFE OF AUXILLARY EQUIPMENT
ELIF	ASSIGNED LIFE OF ORIGINAL PRODUCTION EQUPMENT
ENTRY	COST OF DRILLING PRODUCING WELLS (DRILLING AND EQUIPMENT COSTS)

INSTRUCTION — ORIGINAL PRODUCTION EQUIPMENT ASSIGNED A LEASE IS ENTERED AS TANGE, ADDITIONAL EQUIPMENT OCCASIONED BY A MODIFICATION OF PRODUCTION METHOD IS LISTED AS AUXILLARY EQUIPMENT (AUXEQ). AS ONLY ONE TYPE OF EQUIPMENT CAN BE ENTERED AT A TIME EQLIF IS PERTINENT TO THE ENTRY MADE.



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

SUFF1	TOTAL NUMBER OF WELLS DRILLED
LEASE1	INTERNAL VARIABLE USED TO CHECK THE VALUE OF LEASE

ADMINISTRATOR'S DRILLING REPORT

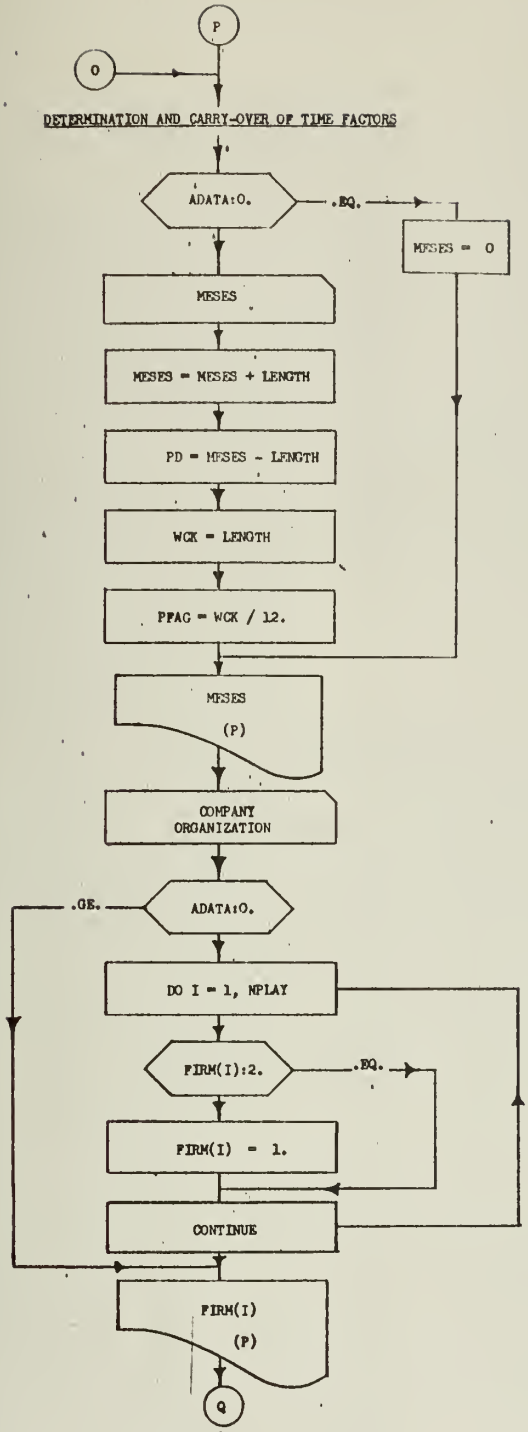
LEASE	LEASE NUMBER
IDENT	LEASE OWNER
WELLS	NUMBER OF PRODUCING WELLS ON A LEASE
DRIHOL	NUMBER OF DRY HOLES DRILLED
SUFF1	TOTAL NUMBER OF WELLS DRILLED
DRICS	COST OF DRILLING DRY HOLES
ENTRY	COST OF DRILLING PRODUCING WELLS (DRILLING AND (EQUIPMENT COSTS)
DRILCS	TOTAL DRILLING COST ASSIGNED THE LEASE(DRILLING AND EQUIPMENT COSTS)
EQBOOK	DEPRECIABLE ASSETS ASSIGNED A LEASE
NTANGE	INTANGIBLE ASSETS ASSIGNED A LEASE

PRODUCTION DATA

PROD	PRODUCTION RATE(MCF/DAY FOR GAS OR BOPD FOR OIL)
TIME	TIME DURATION OF A PRODUCTION INTERVAL(DAYS)
GOR	GAS-OIL RATIO PERTINENT FOR OIL PRODUCTION WITH SOLUTION GAS(FOR OIL PRODUCTION ONLY)
PRES	PRESSURE PERTINENT TO A PRODUCTION INCREMENT(THE AVERAGE WELL HEAD PRESSURE DURING A INCREMENT IN PSIA)

PLAYER'S DRILLING RESUME REPORT

I	PLAYER NUMBER
U(I)	TOTAL NUMBER OF PRODUCING WELLS DRILLED
V(I)	TOTAL NUMBER OF DRY HOLES DRILLED
W(I)	TOTAL DRILLING COST FOR THE PERIOD
Y(I)	COST OF DRILLING DRY HOLES
HOLD(I)	TOTAL INTANGIBLE ASSETS



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

TIME FACTORS

MESES	CUMULATIVE MONTHS OF PLAY
PD	INTERNAL VARIABLE FOR THE TRANSPOSITION OF MESES FROM FIXED TO FLOATING POINT
WCK	INTERNAL VARIABLE FOR THE TRANSPOSITION OF LENGTH FROM FIXED TO FLOATING POINT
PFAC	FRACTION OF A YEAR COMPRISING DURATION OF A CURRENT PLAY PERIOD

READ IN AND CHECK OF COMPANY ORGANIZATION

COMPANY ORGANIZATION

FIRM(I)	ARRAY FOR THE RETENTION OF TYPE OF COMPANY ORGANIZATION ELECTED BY PARTICIPANTS

INFORMATION — COMPANY ORGANIZATION DESIGNATORS

1. PROPRIETARY
2. CORPORATE

IN THE COMPANY ORGANIZATION CHECK SECTION IF A PARTICIPANT FAILS TO DESIGNATE AN ORGANIZATIONAL STRUCTURE THE ORGANIZATION OF HIS FIRM WILL BE AUTOMATICALLY ESTABLISHED AS A PROPRIETORSHIP

COMPANY ORGANIZATION IS ESTABLISHED IN THE PRE-PLAY ROUND AND CANNOT BE CHANGED; THESE ARE CARRIED FORWARD FROM ONE ROUND TO ANOTHER AS PART OF THE GAME PARAMETERS INCLUDED IN THE CARRY-OVER DECK

NOTE: A MORE EXPLICIT DEFINITION OF THE GAME PARAMETERS ENUMERATED ON PAGE 98 IS PRESENTED ON PAGES 54 - 64.

FLOW CHART NOMENCLATURE AND INSTRUCTIONS (CONTINUED FROM LEFT)

BFAC	MULTIPLE FOR DETERMINATION OF LEASE PURCHASE BONUS
ROYAL	LAND OWNER'S ROYALTY (EXPRESSES AS A PER-CENTAOE)
ABNCS	PER WELL ABANDONMENT COST
PDCOST(I)	PRODUCTION COST (MAXIMUM OF 10 PRODUCTION COSTS FOR EACH GAS AND OIL PRODUCTION)

INSTRUCTION

PRODUCTION COSTS ARE NUMERICALLY NUMBERED:

1 - 10 OIL PRODUCTION
11 - 20 GAS PRODUCTION

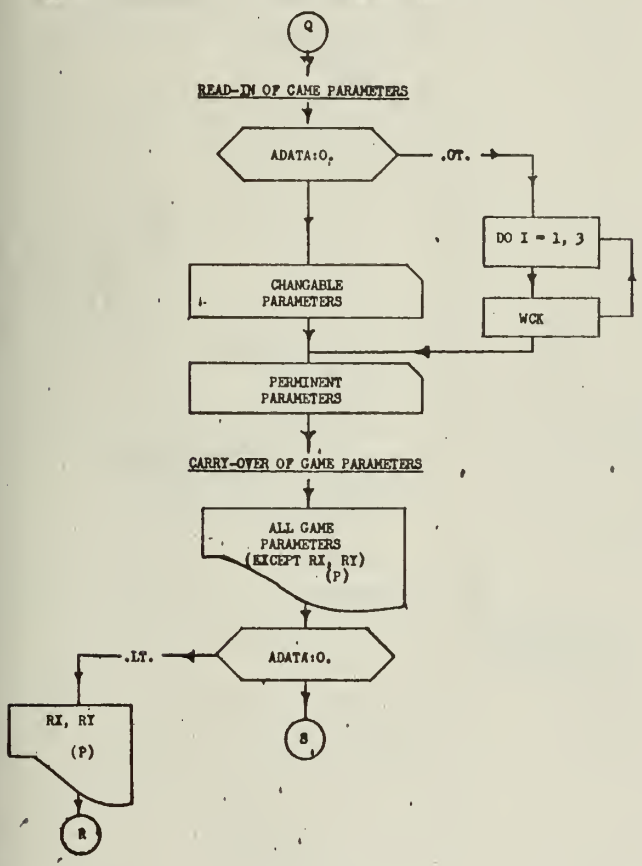
PRODUCTION COST CONSTRUCTION

FIXED DAILY COST + UNIT PRODUCED COST / 1000.

FIXED DAILY COSTS MUST BE IN DOLLARS AND WHOLE CENTS AND UNIT PRODUCED COST IS RESTRICTED TO A MAXIMUM OF $9.99

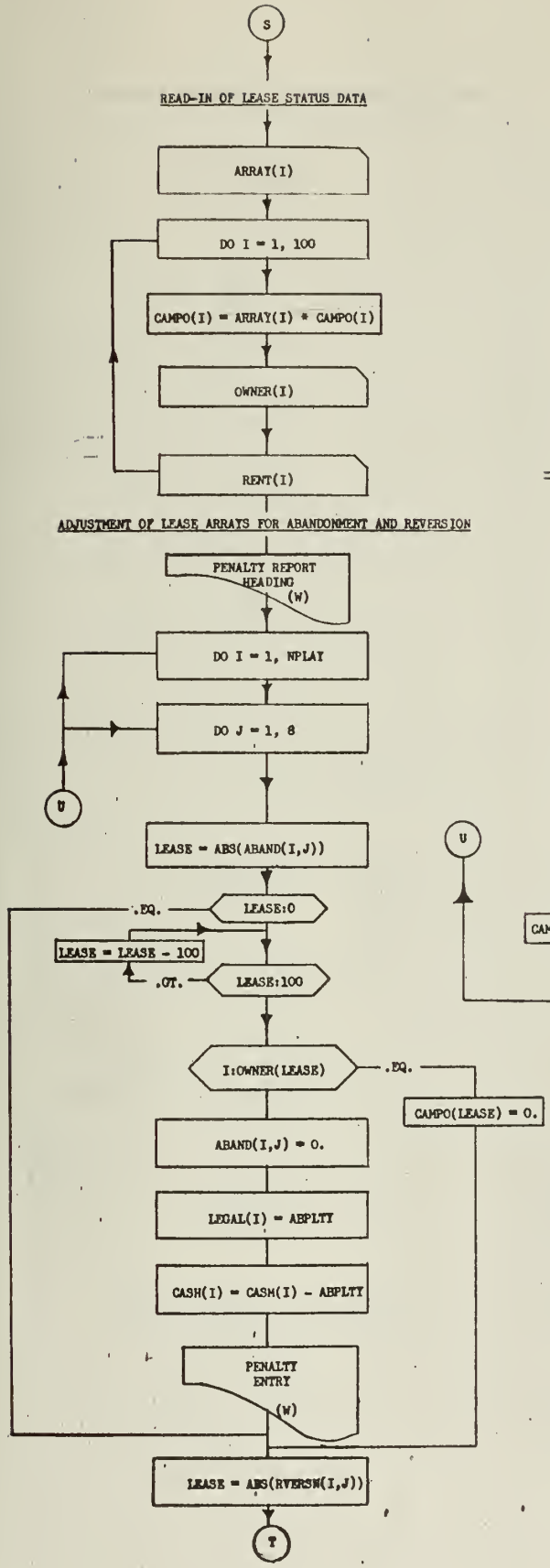
CHANGABLE GAME PARAMETERS

DESCRIBED IN CHANGABLE GAME PARAMETER SECTION



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

GRATE	CAPITAL GAINS TAX RATE
DCPLTY	DOLLAR VALUE PENALTY CHARGE FOR REQUESTING A CHANGE IN THE METHOD FOR CALCULATING DEPRECIATION THAT IS NOT IN ACCORDANCE WITH REGULATIONS
EQPLTY	CHARGE FOR USING EQUIPMENT BEYOND ITS SPECIFIED LIFE(EQPLTY IS EXPRESSED IN A PER CENTAGE AND THE CHARGE IS COMPUTED AS EQPLTY X STRAIGHTLINE DEP-RECIATION FOR THE DURATION OF THE PLAY PERIOD)
ABPLTY	DOLLAR VALUE PENALTY LEVIED AGAINST PARTICIPANTS FOR AN ATTEMPT TO ABANDON A LEASE NOT OWENED BY HIM
TNATE	DURATION OF THE PRIMARY TERM OF LEASES
RENTPA	TIME ALLOWED FOR LEASE DEVELOPMENT WITHOUT THE PAYMENT OF DELAY RENTAL
RX	MULTIPLIER USED FOR THE GENERATION OF RANDOM NUMBERS
RY	MULTIPLICAND USED FOR THE GENERATION OF RANDOM NUMBERS
FOVHB	CONSTANT PORTION OF FIXED OVERHEAD
FOVHM	SLOPE OF THE LINEAR FUNCTION DEFINING FIXED OVERHEAD
CORTAX	CORPORATE TAX RATE
SEVTAX	SEVERENCE TAX RATE(PERCENTAGE APPLIED TO THE VALUE OF GROSS PRODUCTION LESS ROYALTY)
FACTLN	PERCENTAGE FACTOR THAT WHEN APPLIED TO THE LIQUIDA-TIONAL VALUE OF A COMPANY DEFINES THE MAXIMUM LONG TERM LOAN THAT A COMPANY CAN INCURR.
FACSTK	SAME AS FACTLN EXCEPT APPLIED TO THE LIQUIDATIONAL VALUE TO DETERMINE THE MAXIMUM STOCK ISSUANCE
DRATE	DISCOUNT RATE USED IN THE COMPUTATION OF THE PRESENT VALUE OF UNREALIZED PRODUCTION(EXPRESSED AS A PER-CENTAGE)
TLNINT	ANNUAL LONG TERM LOAN INTEREST(EXPRESSED AS A PER-CENTAGE)
SLNINT	ANNUAL SHORT TERM LOAN INTEREST(EXPRESSED AS A PER CENTAGE)
ELNINT	MONTHLY INTEREST RATE APPLIED TO EMERGENCY LOANS (EXPRESSED AS A PER CENT)
SECDIV	ANNUAL PERCENTAGE DIVIDEND RATE FOR SHORT TERM SEC-URITIES
PARVAL	PAR VALUE ASSIGNED TO CORPORATE STOCK FOR ALL COMPANIES
TBRAC(I)	INTERMEDIATE VALUES DEFINING THE BRACKETS FOR THE COMPUTATION OF PERSONAL INCOME TAX USING THE TAX SCHEDULE(SEVEN VALUES REQUIRED, 0. AND CONTAINED IN THE PROGRAM)
TRATE(I)	PERCENTAGE TAX RATES PERTINENT TO EACH OF THE TAX BRACKETS(EIGHT VALUES REQUIRED)
SEBRAC(I)	INTERMEDIATE VALUES DEFINING THE BRACKETS FOR THE SCHEDULE FOR THE DETERMINATION OF CHARGE FOR STOCK TRANSACTIONS(SEVEN VALUES REQUIRED, 0. AND CONTAINED IN THE PROGRAM)
BIRATE(I)	PERCENTAGE RATE WHEN APPLIED TO THE AMOUNT OF A STOCK PURCHASE DETERMINES THE CHARGE FOR THE PURCHASE
SLRATE(I)	PERCENTAGE RATE THAT WHEN APPLIED TO THE AMOUNT OF A STOCK ISSUANCE DETERMINES THE CHARGE FOR THE FLOATATION
LAND	NUMBER OF LEASES THAT WILL BE OFFERED FOR SALE DURING TOTAL PLAY (MAXIMUM OF 100)
LANMAX	MAXIMUM NUMBER OF LEASE BIDS THAT CAN BE SUBMITTED BY A PARTICIPANT DURING A SINGLE ROUND OF PLAY(MAXIMUM OF EIGHT)
NPRMTD	NUMBER OF PRODUCTION METHODS THAT WILL BE USED IN PLAY (THIS MUST EQUAL THE MAXIMUM PRODUCTION METHOD NUM-ERICAL DESIGNATION AND ANY INTERMEDIATE METHODS NOT USED CAN BE SET TO ZERO)
PRSCUT	CUT-OFF PRESSURE FOR ENTRY OF GAS INTO A TRANSMISSION LINE
GASCUT	AVERAGE ECONOMIC CUT-OFF FOR GAS PRODUCTION FOR THE COMPUTATION OF UNREALIZED GAS RESERVES (MCF/DAY)
OILCUT	SAME AS GASCUT EXCEPT APPLIED TO OIL PRODUCTION (BOPD)
DPMAX	MAXIMUM PERCENTANGE OF TAXABLE INCOME ALLOWABLE FOR DEDUCTION OF PERCENTAGE DEPLETION FOR TAX PURPOSES
PCDEPL	PERCENTAGE OF GROSS PRODUCTION THAT MAY BE CLAIMED AS A DEPLETION ALLOWANCE DEDUCTION FOR TAX PURPOSES



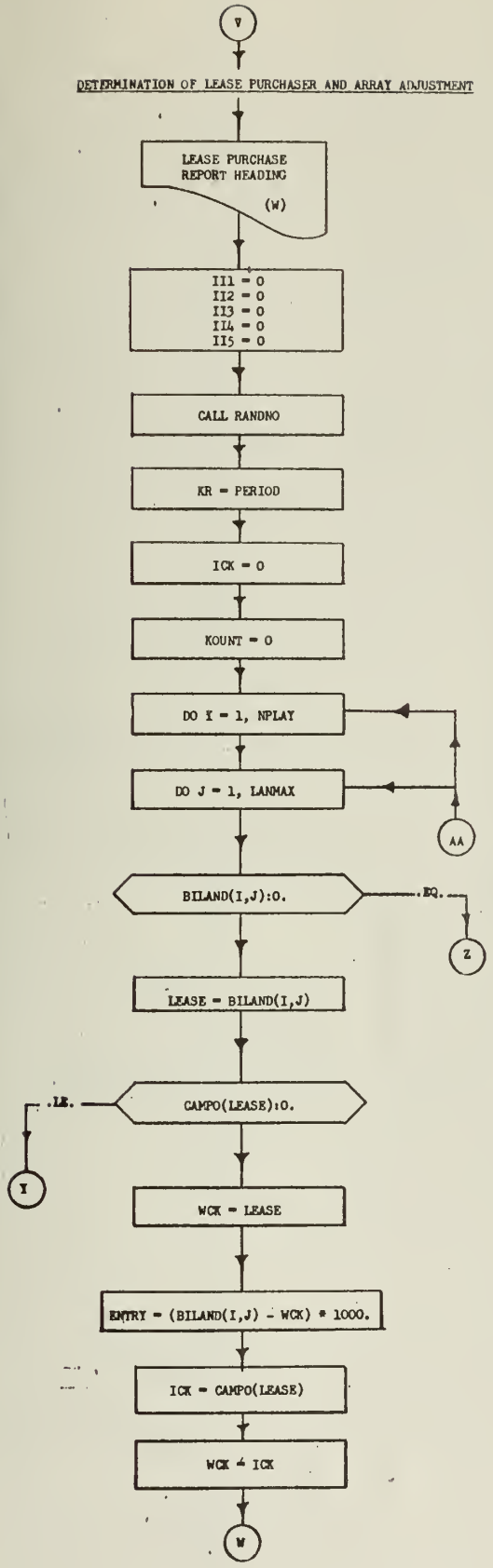
FLOW CHART NOMENCLATURE AND INSTRUCTIONS

READ-IN OF LEASE STATUS DATA

ARRAY(100)	COMMON ARRAY USED FOR THE RETENTION OF CAMPO(LEASE) READ-IN FROM CARRY-OVER DECK

ABANDONMENT PENALTY ENTRY

LEASE	LEASE NUMBER
I	PLAYER NUMBER
OWNER(I)	LEASE OWNER
ABPLTY	ABANDONMENT PENALTY



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

RANDOM NUMBER GENERATOR

CALLING ARGUMENTS

RX	MULTIPLIER USED FOR RANDOM NUMBER GENERATION
RY	MULTIPLICAND USED FOR RANDOM NUMBER GENERATION
RNUM(500)	STORAGE ARRAY FOR RANDOM NUMBERS GENERATED

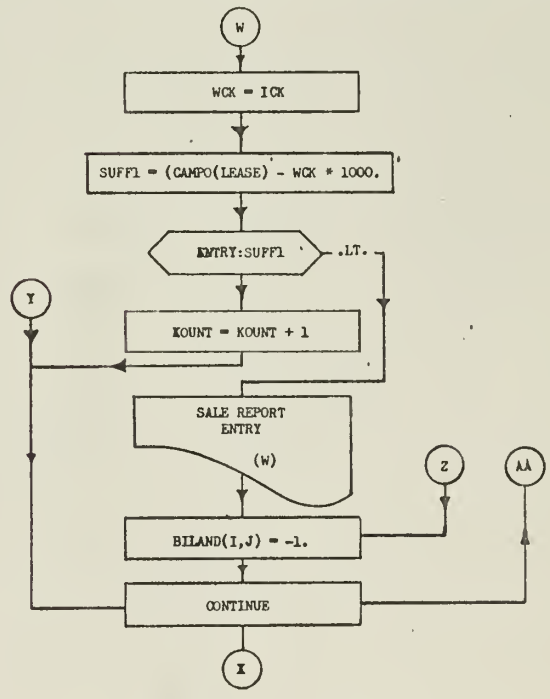
OTHER VARIABLES

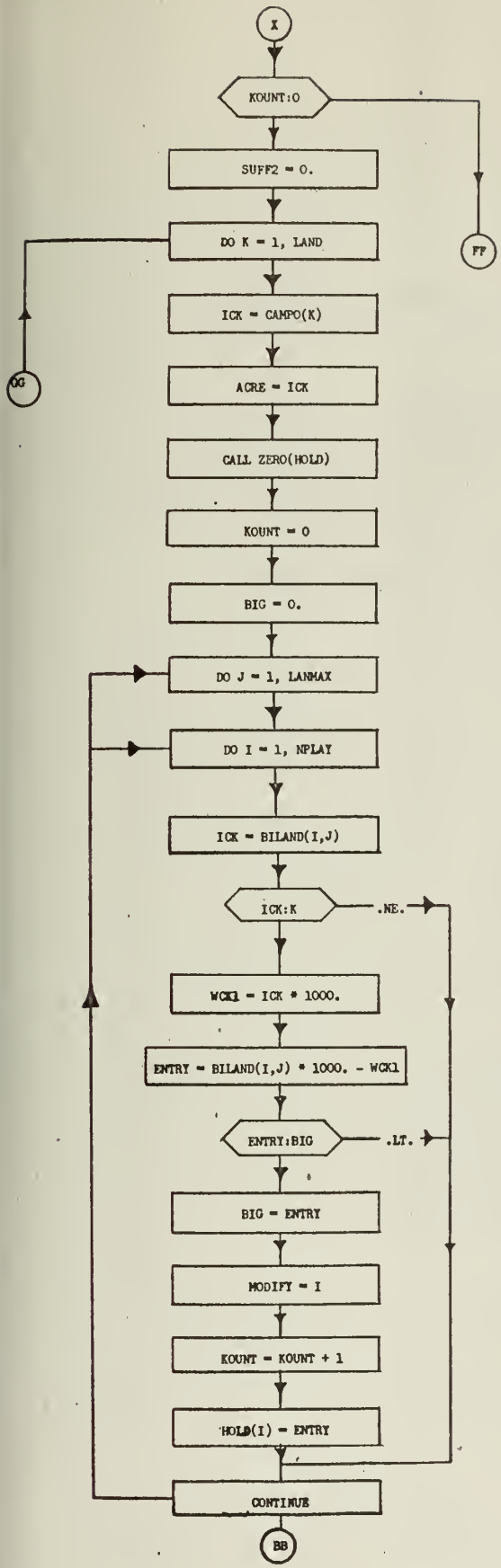
III	INDEX USED FOR WRITE-OUT OF PLAYER REPORT
II2	" "
II3	" "
II4	" "
II5	" "
KR	INDEX USED IN CONJUNCTION WITH RNUM
ICK	INTERNAL TRANSPOSITION VARIABLE USED FOR CHANGING FLOATING TO FIXED POINT
KOUNT	INTERNAL COUNTER
WCK	INTERNAL TRANSPOSITION VARIABLE FOR CHANGING FIXED TO FLOATING POINT
LEASE	LEASE NUMBER
SUFF1	MINIMUM DELAY RENTAL FOR A LEASE
ENTRY	LEASE NUMBER RECOVERED FROM BILAND(I,J)
BILAND(I,J)	HOLDING ARRAY FOR PARTICIPANTS LEASE BIDS

LEASE SALE REPORT ENTRY

ENTRIES

LEASE	LEASE NUMBER ON WHICH BID WAS MADE
I	PARTICIPANT MAKING BID
STATEMENT	"LEASE BID NOT CONSIDERED, IT BEING LESS THAN THE MINIMUM REQUIRED DELAY RENTAL"





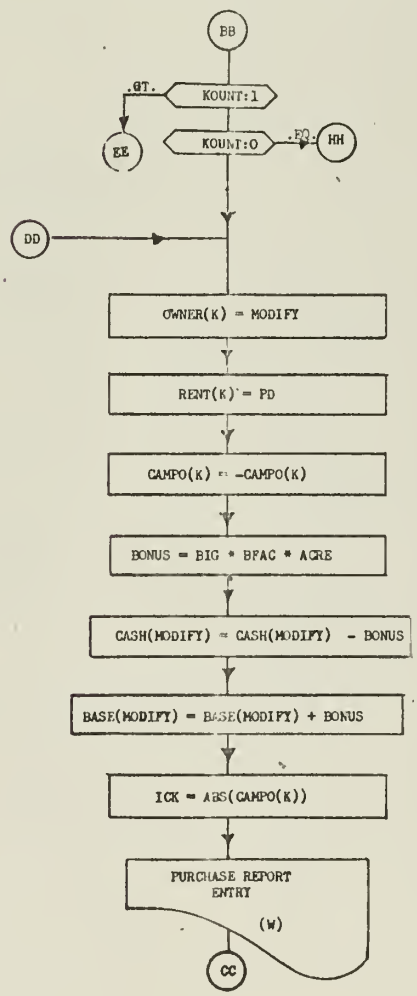
FLOW CHART NOMENCLATURE AND INSTRUCTIONS

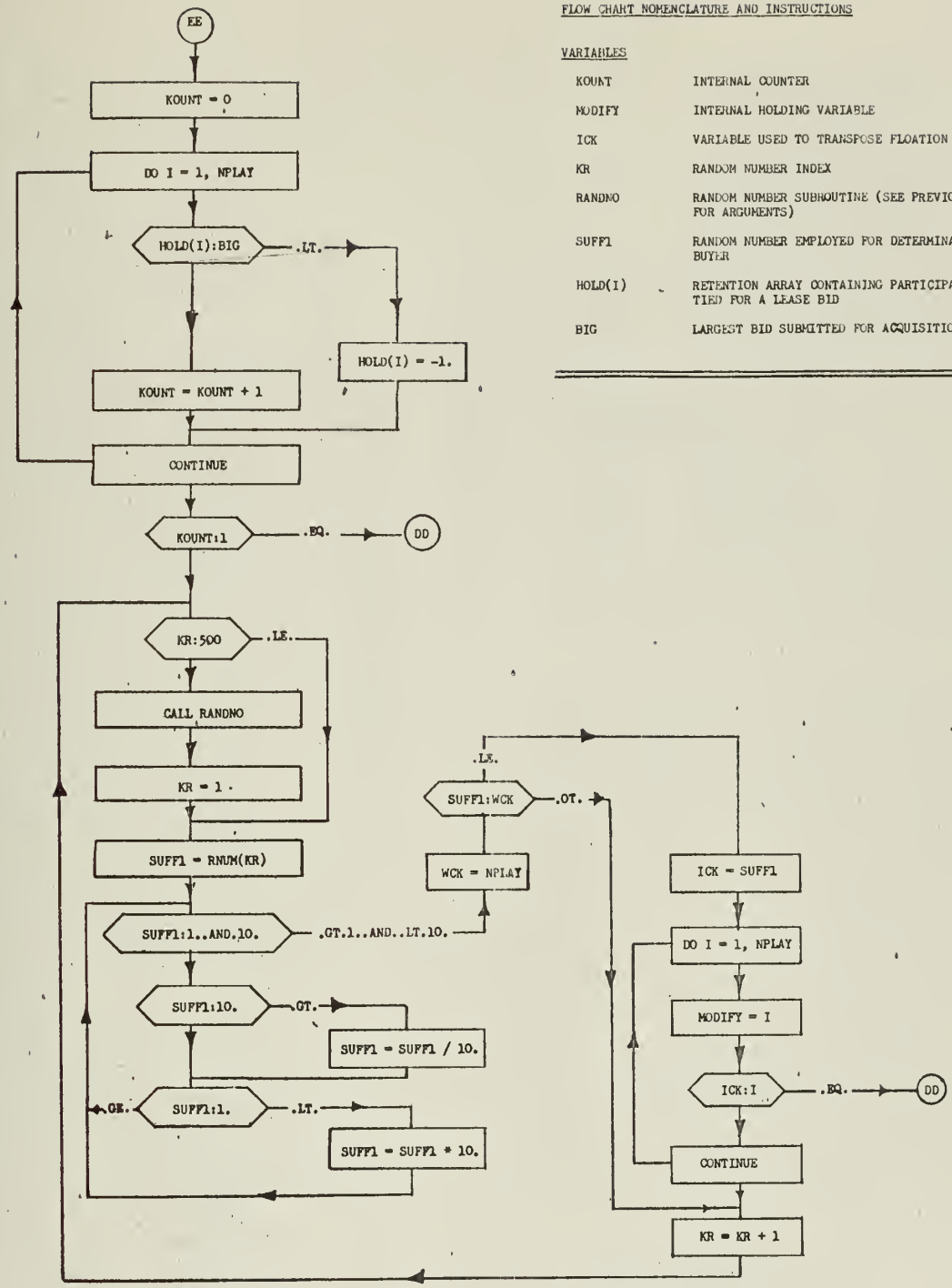
VARIABLE NAMES

K	DO COUNTER REPRESENTING LEASE NUMBERS
ICK	INTERNAL VARIABLE USED TO TRANSPOSE FLOATING TO FIXED POINT
WCK	INTERNAL VARIABLE USE TO TRANSPOSE FIXED TO FLOATING POINT
WCK1	INTERNAL VARIABLE USED TO TRANSPOSE FIXED TO FLOATING POINT AND ALSO HOLD VALUES AWAITING OPERATION
ENTRY	PLAYER DELAY RENTAL BID
BIG	LARGEST OF BIDS FOR A LEASE
MODIFY	INTERNAL HOLDING VARIABLE
KOUNT	INTERNAL COUNTER
ACRE	LEASE ACREAGE
HOLD(I)	RETENTION ARRAY FOR TIE DELAY RENTAL BIDS
BONUS	BONUS PAYMENT PAID LESSOR

PURCHASE ENTRY

ENTRY	DELAY RENTAL
K	LEASE NUMBER
I	PURCHASER
BONUS	BONUS PAYMENT
ACRE	LEASE ACREAGE

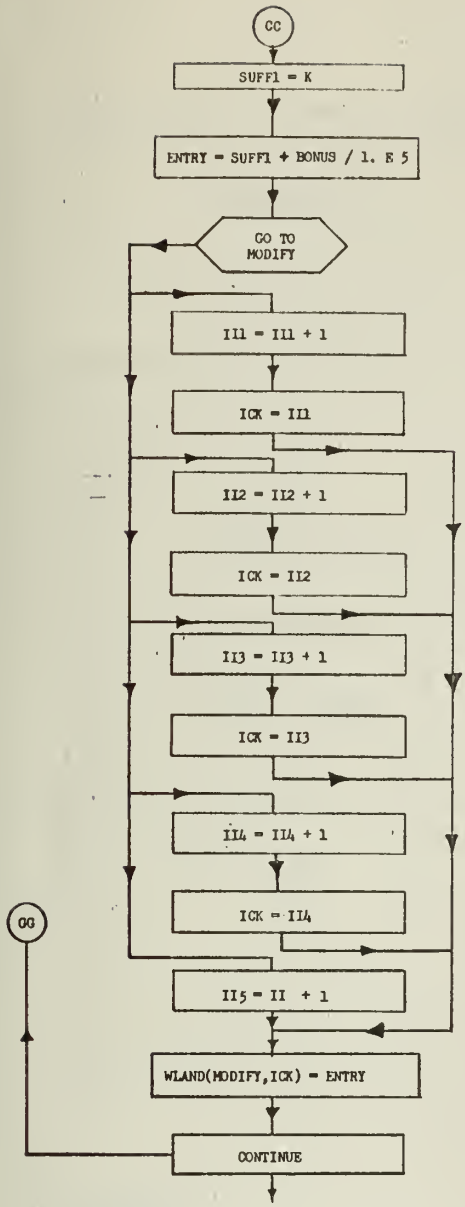




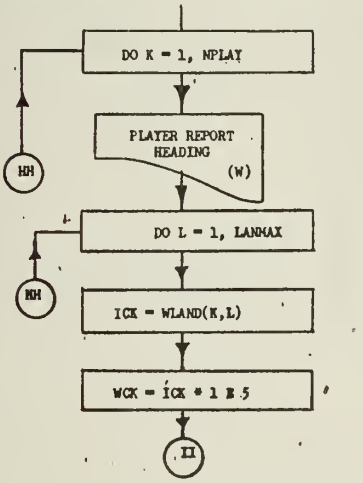
FLOW CHART NOMENCLATURE AND INSTRUCTIONS

VARIABLES

KOUNT	INTERNAL COUNTER
MODIFY	INTERNAL HOLDING VARIABLE
ICK	VARIABLE USED TO TRANSPOSE FLOATION TO FIXED POINT
KR	RANDOM NUMBER INDEX
RANDNO	RANDOM NUMBER SUBROUTINE (SEE PREVIOUS FLOW CHART FOR ARGUMENTS)
SUFF1	RANDOM NUMBER EMPLOYED FOR DETERMINATION OF A LEASE BUYER
HOLD(I)	RETENTION ARRAY CONTAINING PARTICIPANT NUMBERS TIED FOR A LEASE BID
BIG	LARGEST BID SUBMITTED FOR ACQUISITION OF A LEASE



PREPARATION OF PLAYER LEASE PURCHASE REPORT



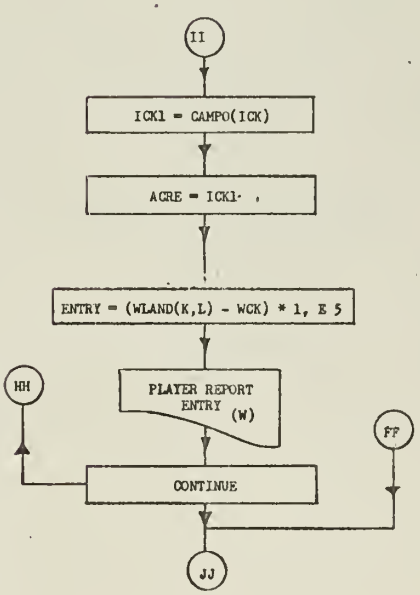
FLOW CHART NOMENCLATURE AND INSTRUCTIONS

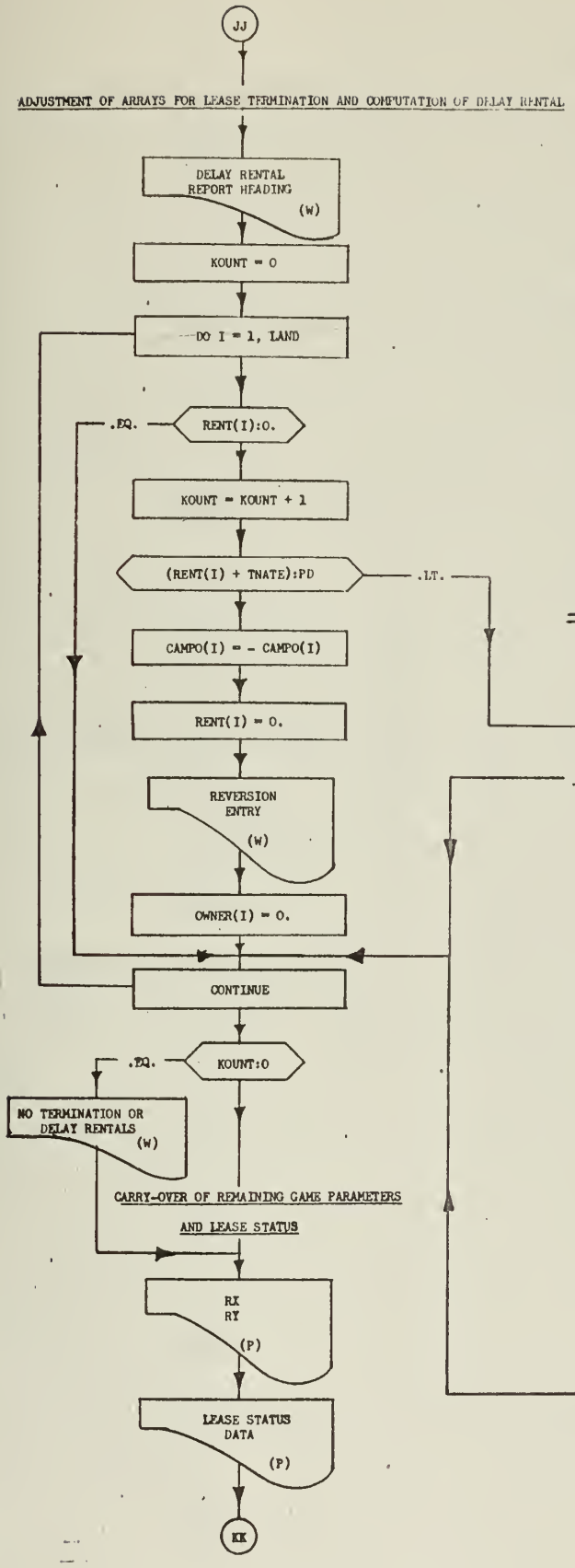
VARIABLES

SUFF1	INTERNAL VARIABLE TO TRANSPOSE THE LEASE NUMBER FROM FIXED TO FLOATING POINT
ENTRY	HOLDING VARIABLE FOR THE LEASE NUMBER AND BONUS PAID (FIRST USE OF ENTRY)
MODIFY	INTERNAL VARIABLE REPRESENT PLAYER NUMBER
II1 - II5	INTERNAL COUNTERS USED FOR WLAND(MODIFY,ICK) INDEXING - THIS VARIABLE COUNTING THE NUMBER OF LEASES PURCHASED BY A PARTICIPANT
ICK	VARIABLE REPRESENTING LEASE NUMBER
WCK	TRANSPOSITION VARIABLE FOR CHANGING ICK TO FLOATING POINT
ICK1	INTERNAL VARIABLE REPRESENTING A LEASE'S ACREAGE
ACRE	FLOATING POINT REPRESENTATION OF LEASE ACREAGE
ENTRY	LEASE DELAY RENTAL (SECOND USE)

PLAYER REPORT ENTRY

MODIFY	PLAYER NUMBER
ACRE	LEASE ACREAGE
ENTRY	LEASE DELAY RENTAL
ICK	LEASE NUMBER





FLOW CHART NOMENCLATURE AND INSTRUCTIONS

VARIABLES

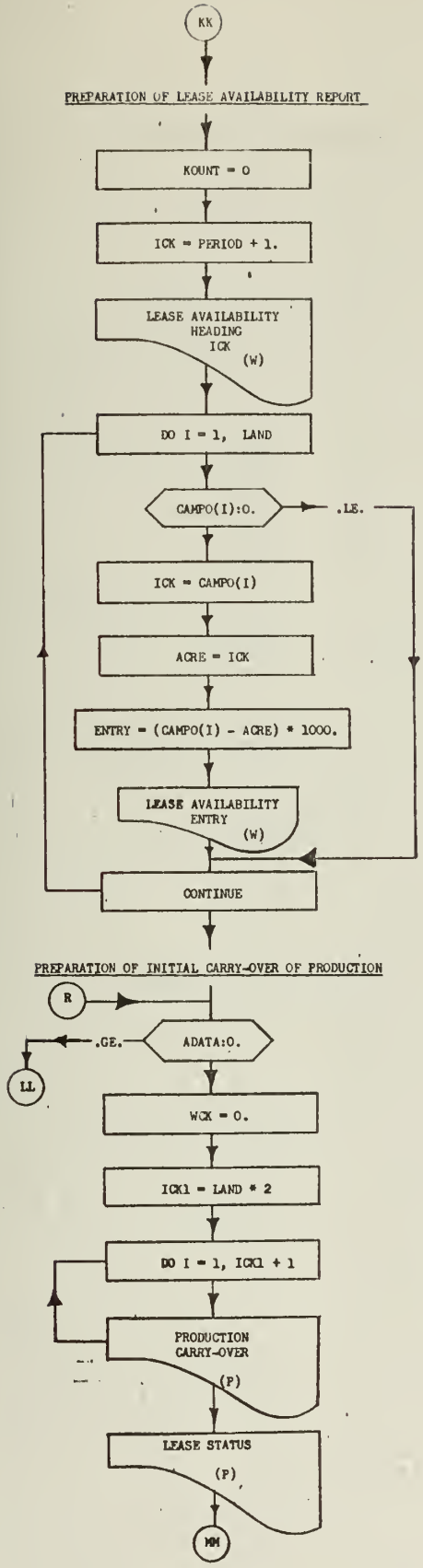
KOUNT	INTERNAL COUNTER
TNATE	PRIMARY TERM OF LEASES (EXPRESSED IN MONTHS)
RENTPA	DEVELOPMENT PERIOD BEFORE CHARGE OF DELAY RENTAL (EXPRESSED IN MONTHS)
MODIFY	INTERNAL HOLDING VARIABLE REPRESENTING PLAYER NUMBERS
ICK	INTERNAL HOLDING VARIABLE USED IN THE TRANSPOSITION FROM FLOATING TO FIXED POINT
ACRE	LEASE ACREAGE
ENTRY	DELAY RENTAL PAYMENT
SUFF1	ANNUAL DELAY RENTAL PER ACRE

REVERSION ENTRY

OWNER(I)	LEASE OWNER PRIOR TO REVERSION
I	LEASE NUMBER OF LEASE REVERTED

DELAY RENTAL ENTRY

MODIFY	LEASE OWNER
I	LEASE NUMBER
ENTRY	DELAY RENTAL CHARGE



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

VARIABLES

ADATA	ADMINISTRATOR CONTROL INDICATOR
WCK	INTERNAL DUMMY VARIABLE
ICK	SUCCEEDING PLAY PERIOD NUMBER (FIRST USE)
ICK	TRANSPOSITION VARIABLE (SECOND USE)
ACRE	LEASE ACREAGE
ENTRY	LEASE DELAY RENTAL

LEASE AVAILABILITY ENTRY

I	LEASE NUMBER
ACRE	LEASE ACREAGE
ENTRY	LEASE DELAY RENTAL

PRODUCTION CARRY-OVER

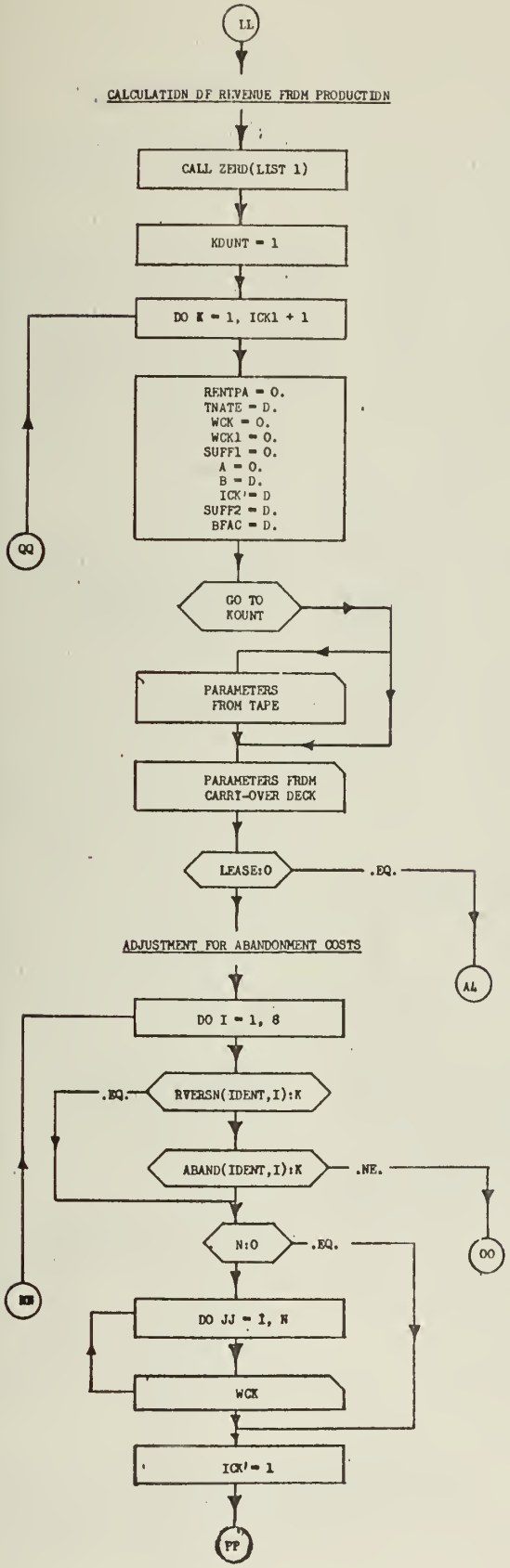
I	LEASE NUMBER

LEASE STATUS

CAMPO(100)

OWNER(100)

RENT(100)



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

LIST 1

W(I)	RETENTION OF EXCESS EQUIPMENT FROM LEASE ABANDONMENT
HOLD(I)	REVENUE OF PARTICIPANTS (CUMULATIVE)
X(I)	PARTICIPANT'S TAXABLE INCOME (CUMULATIVE
Y(I)	LIQUIDITY OF FIRMS (CUMULATIVE)
V(I)	DEPRECIATION OF FIRMS (CUMULATIVE
Z(I)	DEPLETION ALLOWANCE (CUMULATIVE)

ZEROED VARIABLES

ALL ZEROED VARIABLES ARE USED AS COMMON VARIABLES THROUGHOUT THIS SECTION AND WILL BE DESCRIBED AS USED

PARAMETERS FROM TAPE

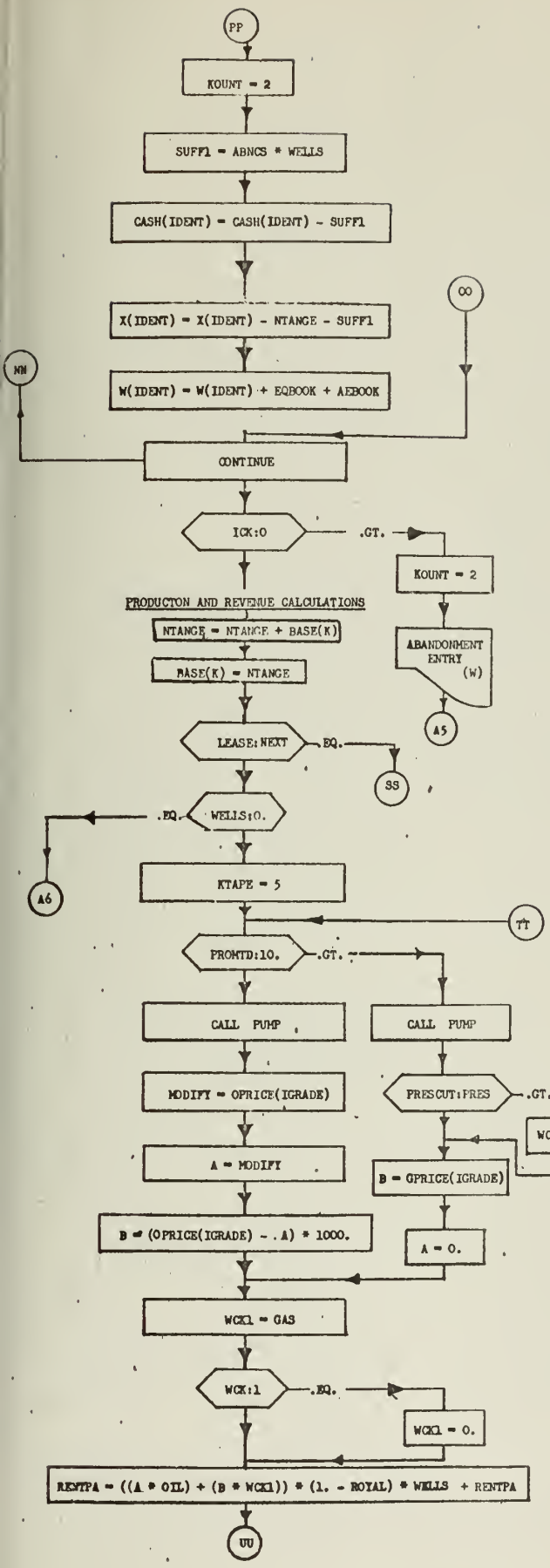
NEXT	LEASE NUMBER
ICK	OWNER OF LEASE
A	DEPRECIATION METHOD ELECTED
J	GRADE OF PETROLEUM PRODUCTION
B	INTANGIBLE ASSETS ASSIGNED A LEASE
WCK	TANGIBLE ASSETS ASSIGNED A LEASE (ORIGINAL PRODUCTION EQUIPMENT)
WCK1	AUXILLIARY EQUIPMENT ASSIGNED A LEASE
SUFF1	PRODUCTION METHOD
ENTRY	NUMBER OF PRODUCING WELLS ON A LEASE
DRILCS	TOTAL DRILLING COST INCLUDING EQUIPMENT
TNATE	EQUIPMENT LIFE ASSIGNED A LEASE IN YEARS
II	NUMBER OF PRODUCTION INCREMENTS INCLUDED ON TAPE UNDER A PARTICULAR LEASE NUMBER

PARAMETERS FROM CARRY-OVER DECK

LEASE	LEASE NUMBER
IDENT	OWNER OF A LEASE
N	NUMBER OF PRODUCTION INCREMENTS REMAINING IN THE CARRY-OVER DECK UNDER A LEASE NUMBER
DEP	DEPRECIATION METHOD APPLICABLE TO A LEASE
IGRADE	GRADE OF PETROLEUM PRODUCTION
NTANGE	UNEXPENSED INTANGIBLE ASSETS ASSIGNED A LEASE
TANGE	COST VALUE OF ORIGINAL EQUIPMENT ASSIGNED A LEASE
AUXEQ	COST VALUE OF AUXILLARY EQUIPMENT ASSIGNED A LEASE
EQBOOK	BOOK VALUE OF ORIGINAL EQUIPMENT ASSIGNED A LEASE
AEBOOK	BOOK VALUE OF AUXILLARY EQUIPMENT ASSIGNED A LEASE
AFDPUR	PURCHASE PERIOD OF AUXILLARY EQUIPMENT
EPDPUR	PURCHASE PERIOD OF ORIGINAL PRODUCTION EQUIPMENT
PROMTD	PRODUCTION METHOD
WELLS	NUMBER OF PRODUCING WELLS ON A LEASE
ALIF	LIFE ASSIGNED AUXILLARY EQUIPMENT ON A LEASE (EXPRESSED IN YEARS)
ELIF	LIFE ASSIGNED ORIGINAL PRODUCTION EQUIPMENT ON A LEASE (EXPRESSED IN YEARS)

OTHER VARIABLES

KOUNT	INTERNAL COUNTER
I	INTERNAL COUNTER
K	INTERNAL COUNTER REPRESENTING LEASE NUMBERS
JJ	INTERNAL COUNTER
WCK	DUMMY VARIABLE USED TO READ INPUT CARDS THAT ARE NOT REQUIRED
ICK	INTERNAL COUNTER

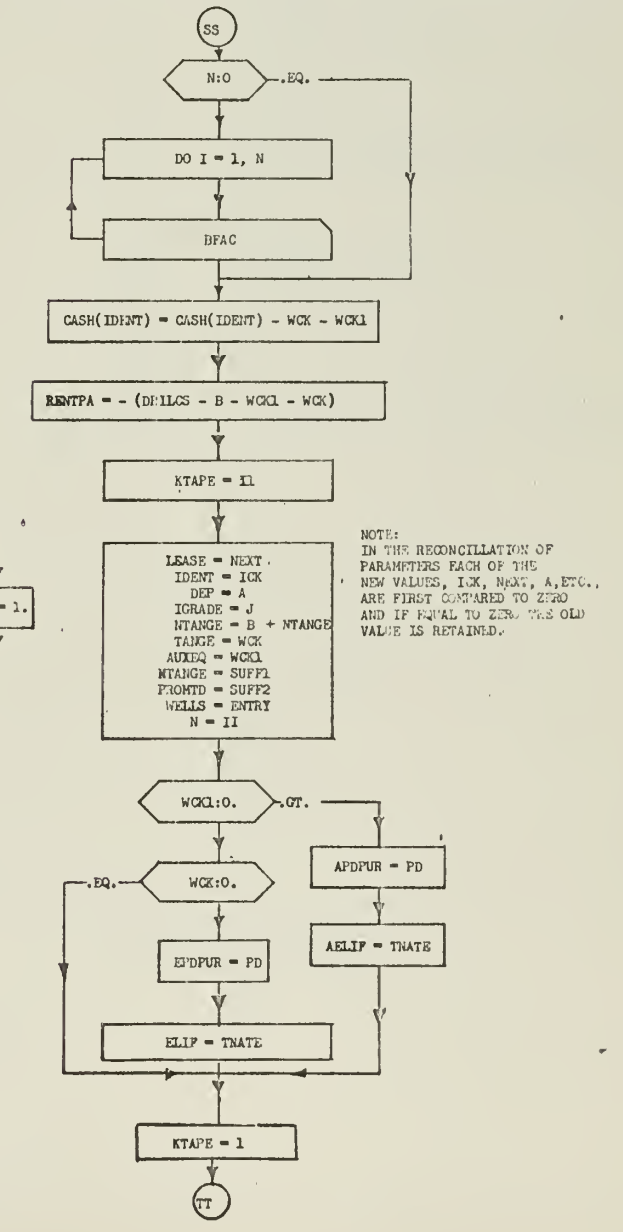


FLOW CHART NOMENCLATURE AND INSTRUCTIONS

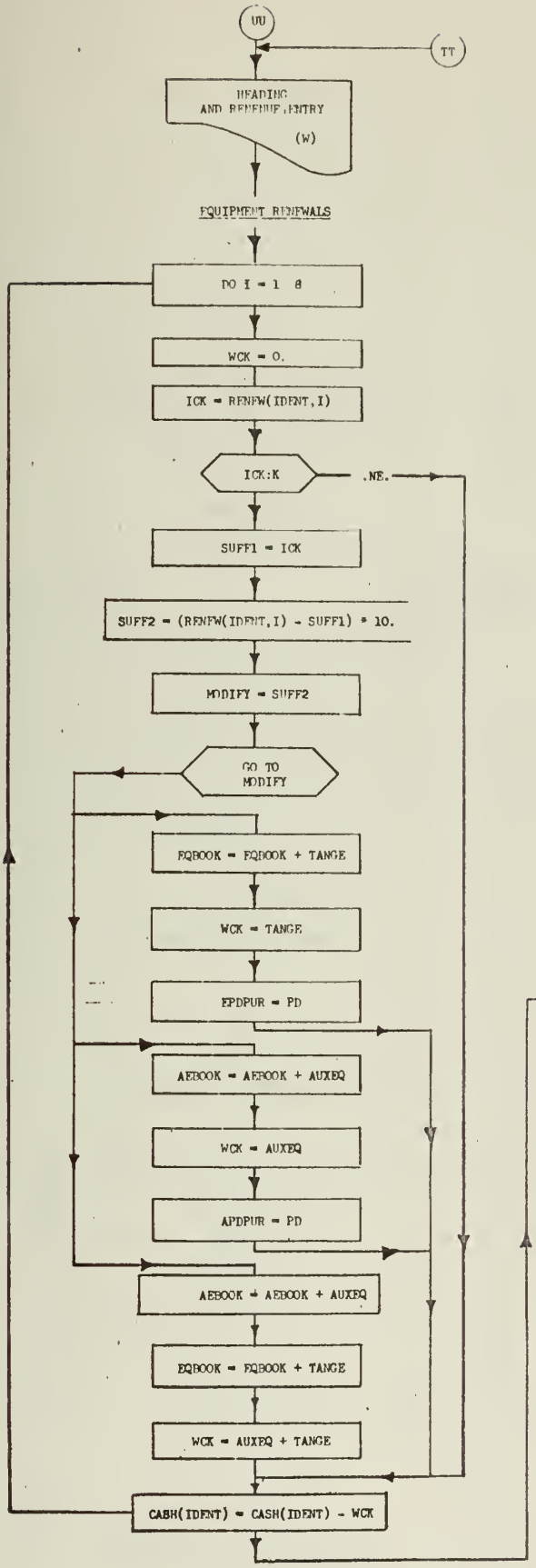
WCK1	HOLDING VARIABLE (AFTER RECONCILLATION OF PARAMETERS)
WCK	INTERNAL INDICATOR SIGNIFYING IF GAS PRODUCTION PRESSURE IS BELOW THAT REQUIRED FOR ENTRY INTO A TRANSMISSION LINE (AFTER RECONCILLATION)
KTAPE	TAPE DRIVE DESIGNATOR FOR READING OF INPUT DATA
KOUNT	INTERNAL COUNTER
BFAC	DUMMY VARIABLE
RENTPA	REVENUE REALIZED FROM PRODUCTION

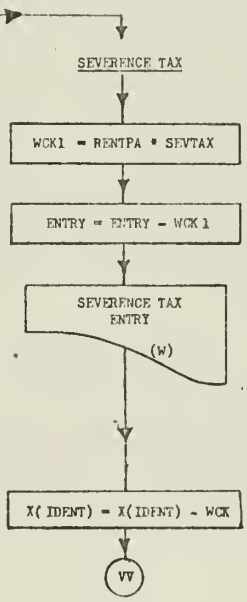
ARGUMENTS FOR SUBROUTINE PUMP

OILALW	OIL PRODUCTION ALLOWABLE
GASALW	GAS PRODUCTION ALLOWABLE
GORALW	SOLUTION GAS-OIL RATIO ALLOWABLE
N	NUMBER OF PRODUCTION INCREMENTS
KTAPE	INPUT TAPE DRIVE DESIGNATION
PROMTD	PRODUCTION METHOD
OIL	OIL PRODUCTION
GAS	GAS PRODUCTION
TPER	NUMBER OF DAYS IN PLAY PERIOD



NOTE:
IN THE RECONCILLATION OF PARAMETERS EACH OF THE NEW VALUES, ICK, NEXT, A, ETC., ARE FIRST CONTARED TO ZERO AND IF EQUAL TO ZERO THE OLD VALUE IS RETAINED.





FLOW CHART NOMENCLATURE AND INSTRUCTIONS

ABANDONMENT ENTRY (FROM PREVIOUS FLOW CHART)

OWNER(I)	LEASE OWNER
K	LEASE NUMBER
WELLS	NUMBER OF WELLS ON THE LEASE
SUFF1	ABANDONMENT COST
AEBOOK	BOOK VALUE OF AUXILLARY EQUIPMENT DECLARED EXCESS DUE TO ABANDONMENT
EQBOOK	BOOK VALUE OF ORIGINAL PRODUCTION EQUIPMENT DECLARED EXCESS DUE TO ABANDONMENT
NTANGE	INTANGIBLE ASSETS NOT EXPENSED AND DECLARED A LOSS DUE TO LEASE ABANDONMENT

HEADING AND REVENUE ENTRIES

K	LEASE NUMBER
IDENT	LEASE OWNER
RENTPA	GROSS REVENUE REALIZED FROM PRODUCTION LESS ROYALTY PAYMENT

EQUIPMENT RENEWAL SECTION

VARIABLES

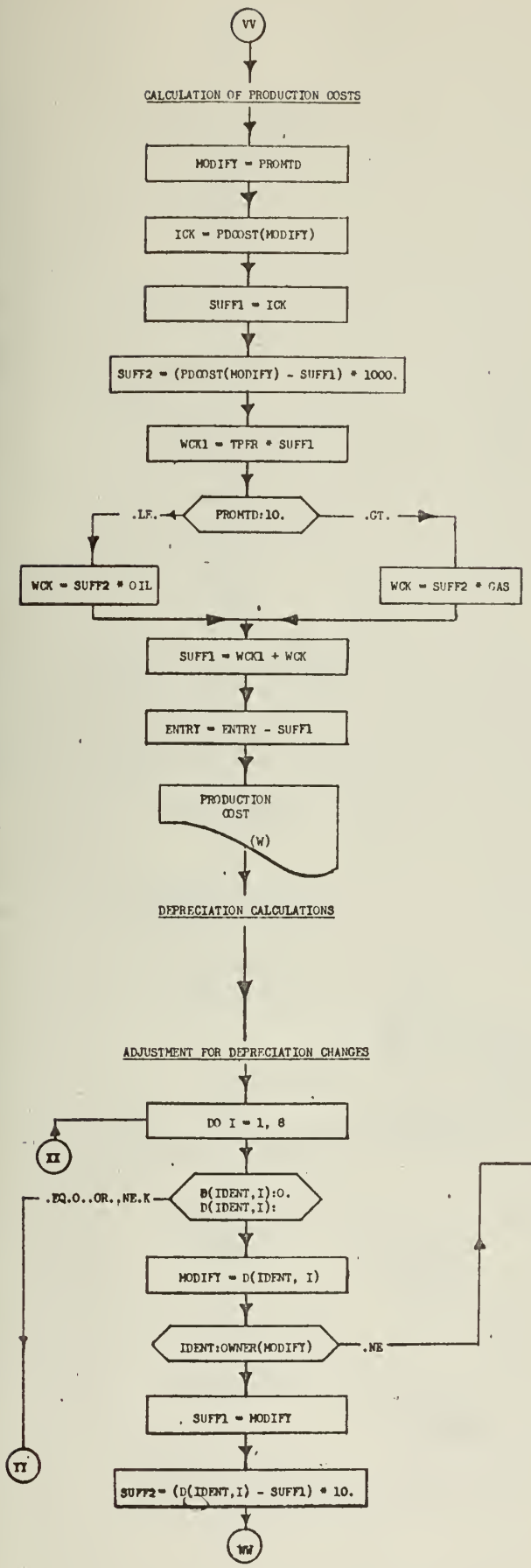
WCK	INTERNAL HOLDING VARIABLE USED FOR THE RETENTION OF EQUIPMENT RENEWAL COSTS
ICK	INTERNAL VARIABLE USED TO RETRIEVE THE LEASE NUMBER FROM THE RENEW(IDENT,I) ENTRY
SUFF1	INTERNAL VARIABLE USED TO TRANSPOSE ICK TO FLOATING POINT
SUFF2	INTERNAL VARIABLE USED TO RETRIEVE THE EXTENT OF EQUIPMENT RENEWAL FROM THE RENEWAL ENTRY
MODIFY	INTERNAL VARIABLE USED TO TRANSPOSE SUFF2 TO FIXED POINT

CALCULATION OF SEVERENCE TAX

WCK1	SEVERENCE TAX CALCULATED
SEVTAX	SEVERENCE TAX RATE

SEVERENCE TAX ENTRY

ENTRY	REVENUE ADJUSTED FOR SEVERENCE TAX PAYMENT



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

CALCULATION OF PRODUCTION COSTS

MODIFY	TRANSPOSITION VARIABLE USED TO CHANGE PROMTD FROM FLOATING TO FIXED POINT
ICK	FIXED POINT FORM OF FIXED DAILY PRODUCTION COSTS (PER DAY)
SUFF1	FLOATING FORM OF FIXED DAILY PRODUCTION COSTS (PER DAY)
SUFF2	VARIABLE PRODUCTION COST DEPENDENT ON THE UNITS OF PETROLEUM PRODUCED (MCF FOR GAS AND BARREL FOR OIL)
TPER	NUMBER OF DAYS IN A PLAY PERIOD BASED ON A 30 DAY MONTH
WCK1	DOLLAR VALUE OF FIXED PRODUCTION COSTS FOR A PLAY PERIOD
WCK	DOLLAR VALUE OF VARIABLE PRODUCTION COST FOR A PLAY PERIOD
SUFF1	TOTAL PRODUCTION COST FOR A PLAY PERIOD (THE SECOND USE OF THIS VARIABLE)

PRODUCTION COST ENTRY

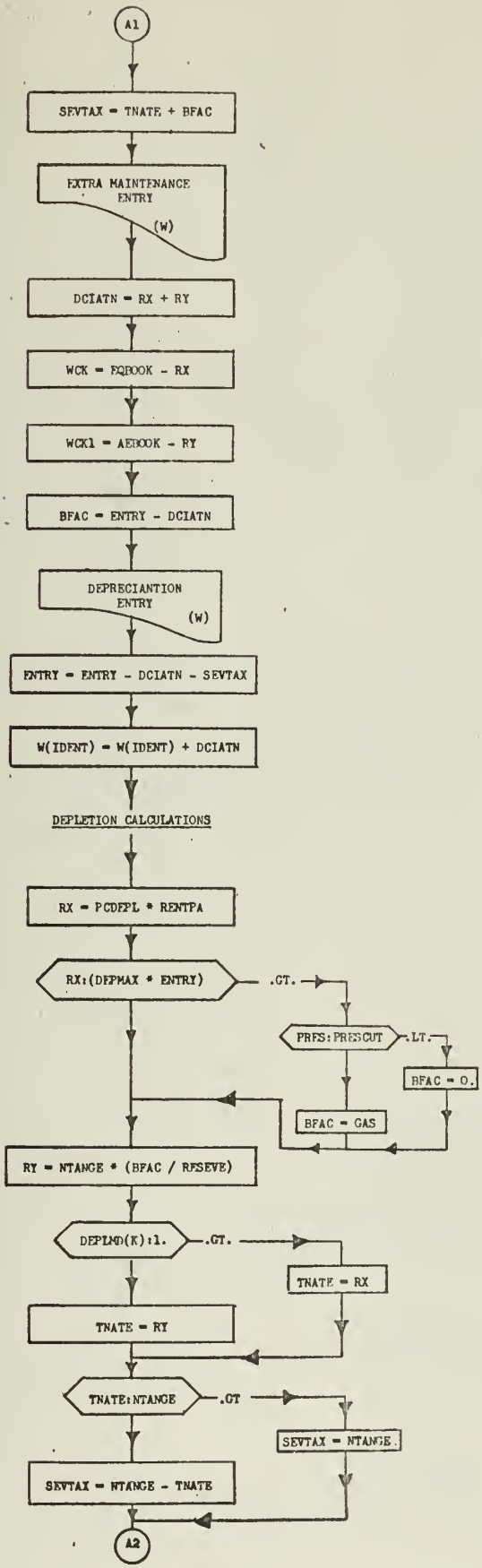
WCK1	DOLLAR VALUE OF FIXED PRODUCTION COST FOR PERIOD
WCK	DOLLAR VALUE OF VARIABLE PRODUCTION COST FOR PERIOD
SUFF1	TOTAL DOLLAR VALUE OF PRODUCTION COST FOR A PERIOD
ENTRY	ADJUSTED REVENUE LESS PRODUCTION COST

DEPRECIATION CALCULATIONS

K	LEASE NUMBER
LEASE1	LEASE NUMBER ADJUSTED FOR INFILL LEASE NUMBERS ABOVE 100

ADJUSTMENT FOR DEPRECIATION CHANGES

D(IDENT,I)	RETENTION ARRAY FOR DEPRECIATION CHANGE REQUESTS
MODIFY	FIXED POINT VARIABLE USED TO RETREVE LEASE NUMBERS FROM THE RETENTION ARRAY
OWNER(MODIFY)	RETENTION ARRAY FOR LEASE OWNERS
SUFF1	FLOATING POINT FORM OF LEASE NUMBERS
SUFF2	DEPRECIATION METHOD REQUESTED



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

TNATE	EXTRA MAINTENANCE CHARGE FOR USE OF ORIGINAL PRODUCTION EQUIPMENT BEYOND SPECIFIED LIFE
BFAC	EXTRA MAINTENANCE CHARGE FOR USE OF AUXILLARY EQUIPMENT BEYOND SPECIFIED LIFE
SEVTAX	TOTAL EXTRA MAINTENANCE CHARGE PERTINENT TO A LEASE

EXTRA MAINTENANCE ENTRY

TNATE	EXTRA MAINTENTENCE CHARGE FOR ORIGINAL PRODUCTION EQUIPMENT
BFAC	EXTRA MAINTENANCE CHARGE FOR AUXILLARY EQUIPMENT
SEVTAX	TOTAL EXTRA MAINTENANCE CHARGE

OTHER VARIABLES

RX	DEPRECIATION FOR ORIGINAL PRODUCTION EQUIPMENT
RY	DEPRECIATION FOR AUXILLARY EQUIPMENT
DCIATN	TOTAL DEPRECIATION ASSIGNABLE TO A LEASE
WCK	HOLDING VARIABLE FOR BOOK VALUE OF PRODUCTION EQUIPMENT
WCK1	HOLDING VARIABLE FOR BOOK VALUE OF AUXILLARY EQUIPMENT
BFAC	HOLDING VARIABLE FOR LEASE INCOME ADJUSTED FOR DEPRECIATION

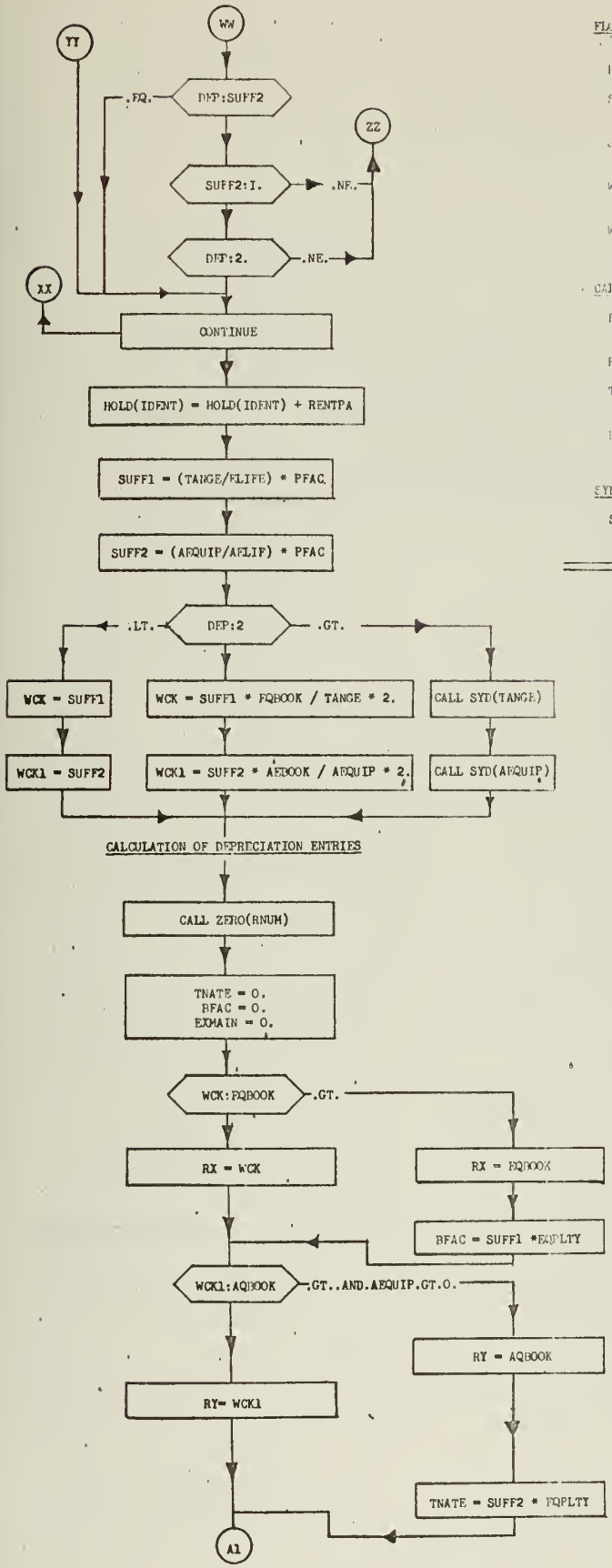
DEPRECIATION ENTRY

EQBOOK	BOOK VALUE OF PRODUCTION EQUIPMENT BEFORE DEPRECIATION DEDUCTION FOR CURRENT PERIOD
AEBOOK	BOOK VALUE OF AUXILLARY EQUIPMENT BEFORE DEPRECIATION DEDUCTION FOR CURRENT PERIOD
RX	DEPRECIATION ON ORIGINAL PRODUCTION EQUIPMENT
RY	DEPRECIATION ON AUXILLARY EQUIPMENT

DEPLETION CALCULATIONS

VARIABLES

RX	PERCENTAGE DEPLETION CALCULATIONS
RY	COST DEPLETION CALCULATIONS
DEPMAX	MAXIMUM ALLOWABLE PERCENTAGE DEPLETION CAN BE OF NET TAXABLE INCOME FROM A LEASE
PCDEPL	PERCENTAGE USED TO DETERMINE MONITARY VALUE OF PERCENTAGE DEPLETION (PERCENTAGE DEPLETION = PCDEPL X GROSS INCOME FROM PRODUCTION)
PRES	PRODUCING PRESSURE
PRSCUT	MINIMUM DELIVERY PRESSURE TO A TRANSMISSION LINE
BFAC	HOLDING VARIABLE FOR GAS PRODUCTION FOR GAS PRODUCING WELLS
RESEVE	RESEVES BEFORE PERIOD'S PRODUCTION
DEPLMD(100)	DEPLETION METHOD DESIGNATED BY A PARTICIPANT
TNATE	DEPLETION CHARGE COMPUTED BY METHOD ELECTED BY PLAYER
SEVTAX	HOLDING VARIABLE FOR THE RETENTION OF A LEASE'S INTANGIBLE ASSETS AFTER DEPLETION DEDUCTIONS FOR A CURRENT PERIOD



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

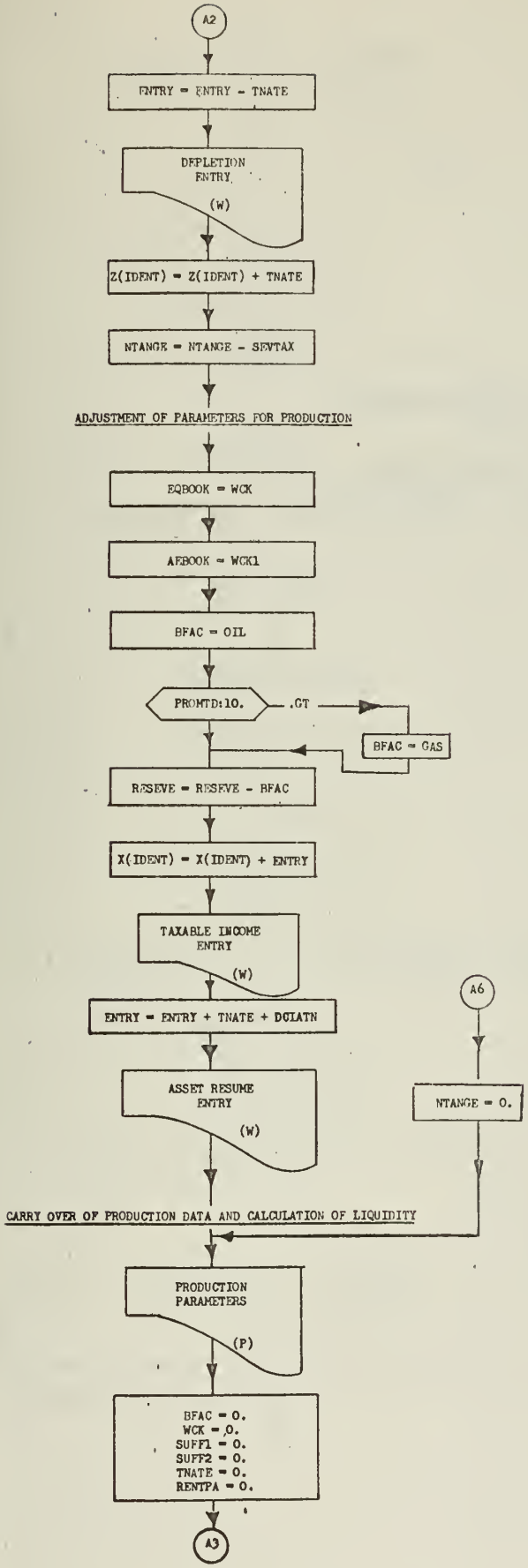
HOLD(5)	RETENTION OF GROSS PRODUCTION
SUFF1	STRAIGHT LINE DEPRECIATION ON ORIGINAL PRODUCTION EQUIPMENT
SUFF2	STRAIGHT LINE DEPRECIATION ON AUXILLARY EQUIPMENT (SECOND USAGE OF THIS CHART)
WCK	DEPRECIATION CALCULATED BY PLAYER DESIGNATED METHOD FOR ORIGINAL PRODUCTION EQUIPMENT
WCK1	DEPRECIATION CALCULATED BY PLAYER DESIGNATED METHOD FOR AUXILLARY EQUIPMENT ASSIGNED A LEASE

CALCULATION OF DEPRECIATION ENTRIES SECTION

RX	DEPRECIATION RECORDED FOR ORIGINAL PRODUCTION EQUIPMENT
RY	DEPRECIATION RECORDED FOR AUXILLARY EQUIPMENT
TNATE	EXTRA MAINTENANCE CHARGE FOR USE OF AUXILLARY EQUIPMENT BEYOND ITS SPECIFIED LIFE
BFAC	EXTRA MAINTENANCE CHARGE FOR USE OF ORIGINAL PRODUCTION EQUIPMENT BEYOND ITS SPECIFIED LIFE

SYD SUBROUTINE

SEE SUBROUTINE FLOW CHART FOR ARGUMENTS



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

DEPLETION ENTRY

RX	PERCENTAGE DEPLETION
RY	COST DEPLETION
NTANGE	INTANGIBLE ASSETS AFTER ADJUSTMENT FOR DEPLETION
TNATE	DEPLETION ALLOWANCE TAKEN
SEVTAX	MAXIMUM ALLOWABLE DEPLETION CHARGABLE AGAINST INTANGIBLE ASSETS

ADJUSTMENT OF PARAMETERS FOR PRODUCTION

WCK	BOOK VALUE OF ORIGINAL PRODUCTION EQUIPMENT AFTER DEPRECIATION CREDIT
WCK1	BOOK VALUE OF AUXILLARY EQUIPMENT AFTER DEPRECIATION CREDIT
BFAC	HOLDING VARIABLE FOR GAS OR OIL PRODUCED

TAXIBLE INCOME ENTRY

ENTRY	TAXABLE INCOME FROM LEASE PRODUCTION

ASSET RESUME ENTRY

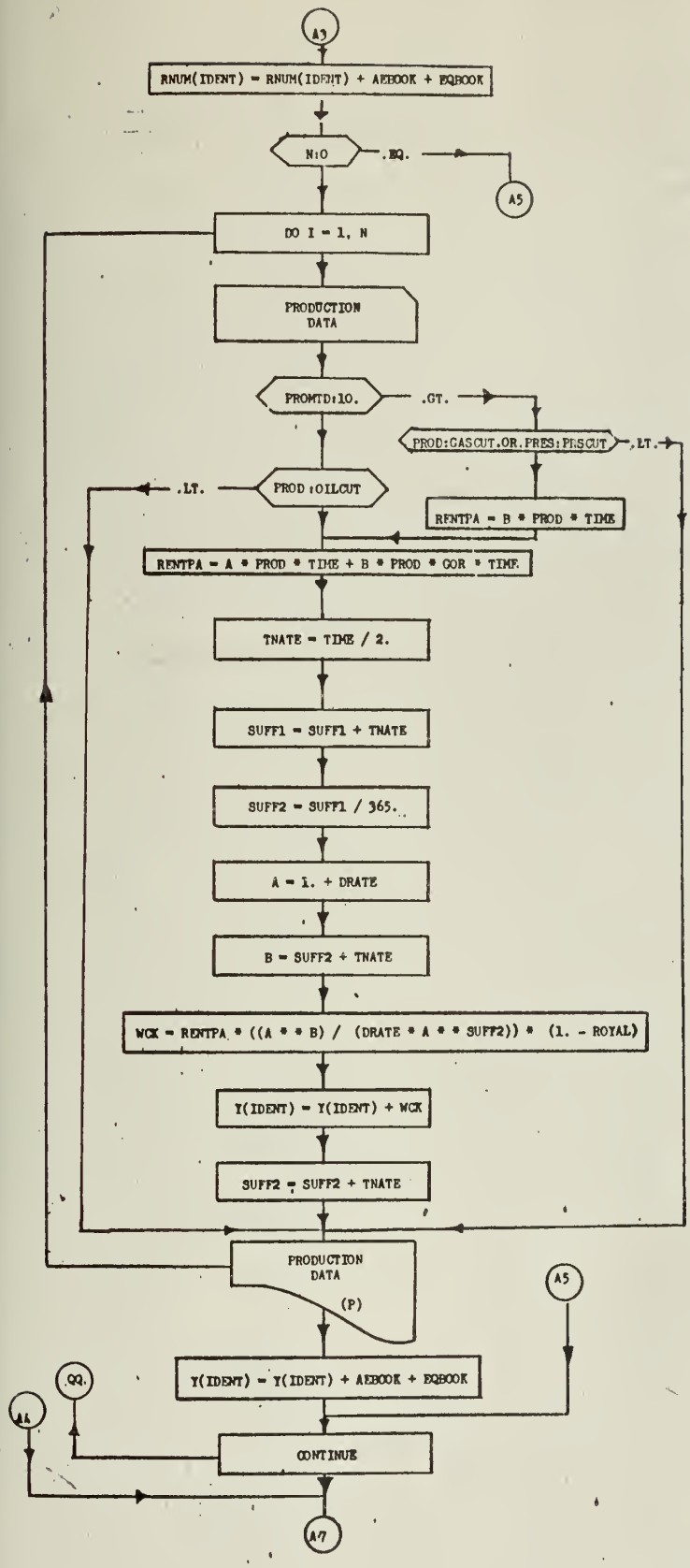
NTANGE	BOOK VALUE OF INTANGIBLE ASSETS ASSIGNED A LEASE
EQBOOK	BOOK VALUE OF PRODUCTION EQUIPMENT ASSIGNED A LEASE
AEBOOK	BOOK VALUE OF AUXILLARY EQUIPMENT ASSIGNED A LEASE

CARRY-OVER OF PRODUCTION PARAMETERS AND DATA

PRODUCTION PARAMETERS

LISTED AT THE BEGINNING OF THE REVENUE CALCULATION SECTION AS THOSE READ FROM THE CARRY-OVER DECK

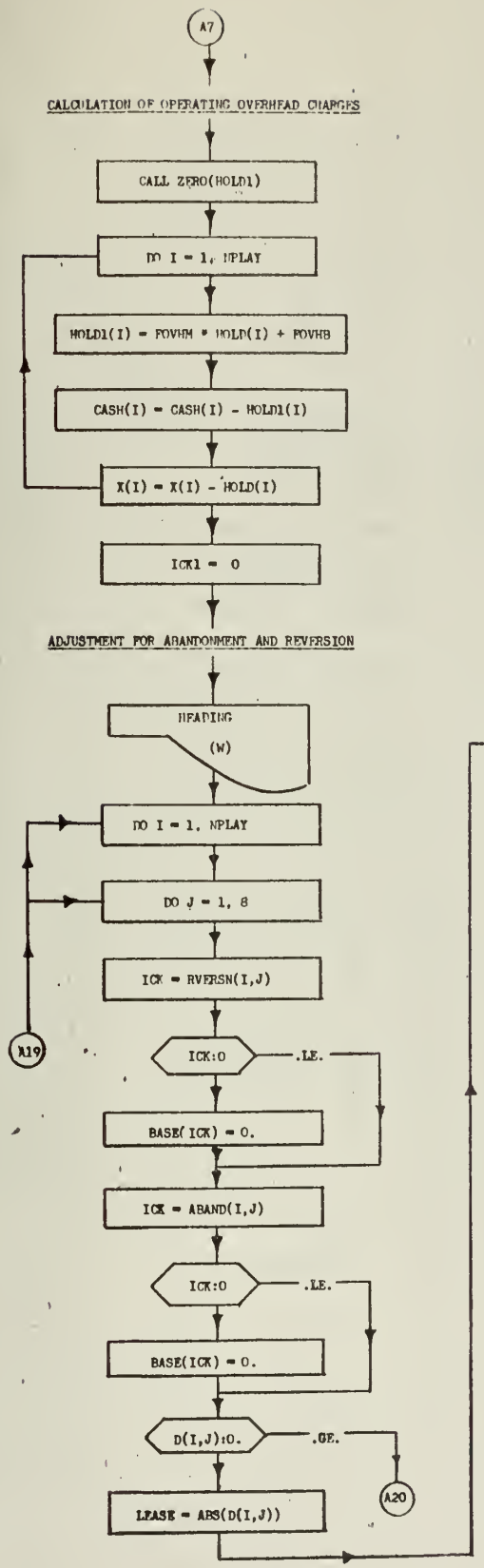
ZEROED VARIABLES	COMMON VARIABLES TO BE USED TO CARRY-OVER PRODUCTION DATA AND COMPUTE LIQUIDITY

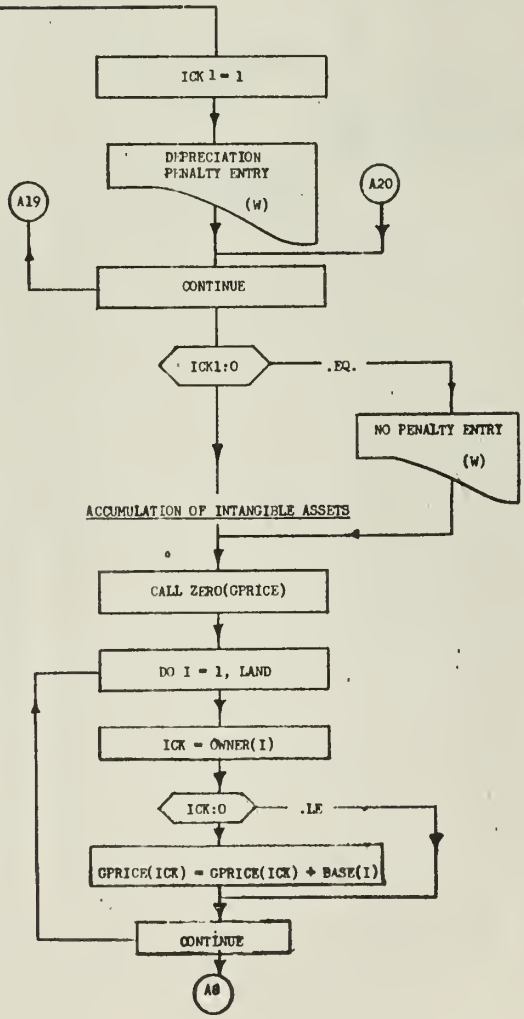


FLOW CHART NOMENCLATURE AND INSTRUCTIONS

PRODUCTION DATA

PROD	PRODUCTION RATE DURING AN INCREMENT (BOPD)
TIME	TIME DURATION OF AN INCREMENT (DAYS)
GOR	GAS-OIL RATIO (IF APPLICABLE) (MCF / BBL)
PRES	AVERAGE PRESSURE DURING A PRODUCTION INCREMENT (PSIA)
OILCUT	AVERAGE ECONOMIC CUT-OFF FOR OIL PRODUCTION (BOPD)
GASCUT	AVERAGE ECONOMIC CUT-OFF FOR GAS WELL PRODUCTION (MCF / DAY)
PRSCUT	MINIMUM PRESSURE FOR ENTRANCE OF GAS INTO A TRANSMISSION LINE (PSIA)
RENTPA	REVENUE DURING A PRODUCTION INCREMENT
ROYAL	LESSOR'S ROYALTY
TNATE	MID-POINT OF A PRODUCTION PERIOD
SUFF1	TOTAL TIME ELAPSED UP UNTIL A PRODUCTION PERIOD (DAYS)
SUFF2	SUFF1 EXPRESSED IN YEARS
DRATE	DISCOUNT RATE USED FOR THE COMPUTATION OF PRESENT VALUE
A	INTERNAL VARIABLE USED AS AN OPERATOR
B	INTERNAL VARIABLE USED AS AN OPERATOR
WCK	PRESENT VALUE OF THE LESSEE' SHARE OF THE REVENUE FROM A PRODUCTION INCREMENT
Y(5)	ARRAY FOR THE RETENTION OF PLAYER LIQUIDITY





FLOW CHART NOMENCLATURE AND INSTRUCTIONS

CALCULATION OF OPERATING OVERHEAD CHARGES

HOLD(5)	HOLDING ARRAY FOR OVERHEAD CHARGES
FOVHM	SLOPE OF THE LINEAR FUNCTION DEFINING OVERHEAD CHARGES
FOVHB	ORDINATE INTERCEPT OF THE LINEAR FUNCTION DEFINING OVERHEAD CHARGES

ADJUSTMENT FOR ABANDONMENT AND REVERSION OF LEASES

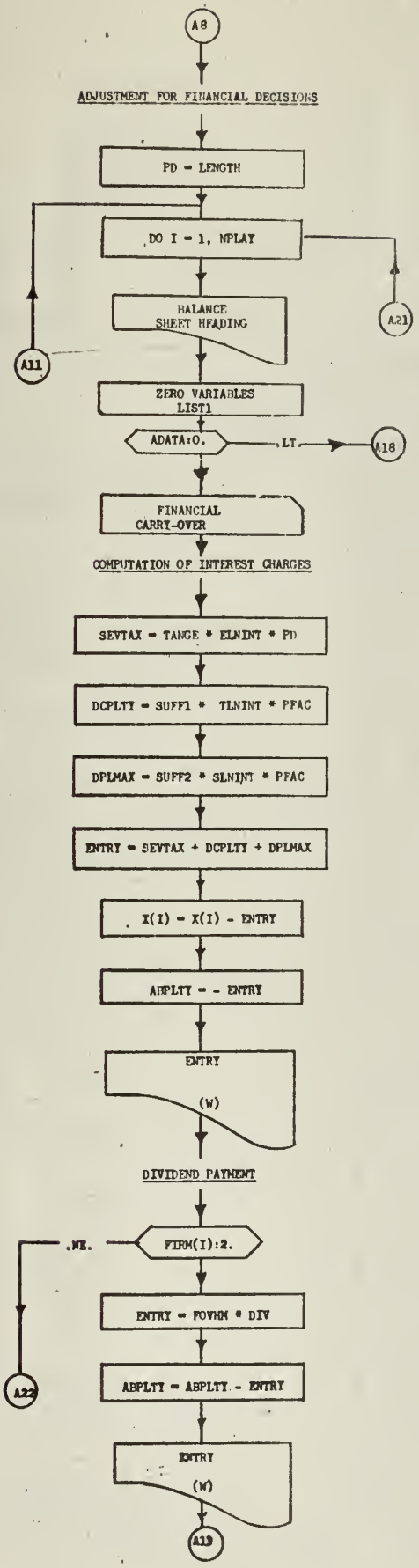
ICK1	INTERNAL COUNTER
ICK	FIXED POINT VERSION OF LEASE NUMBER OF A LEASE
BASE(100)	HOLDING ARRAY FOR INTANGIBLE ASSETS ASSIGNED LEASES
D(5,8)	HOLDING ARRAY FOR DEPRECIATION CHANGES

DEPRECIATION PENALTY ENTRY

I	PARTICIPANT INCURRING THE DEPRECIATION PENALTY
ICK	LEASE NUMBER
DCPLTY	AMOUNT OF THE DEPRECIATION PENALTY

ACCUMULATION OF THE VALUE OF PARTICIPANT'S INTANGIBLE ASSETS

LAND	NUMBER OF LEASES TO BE OFFERED DURING PLAY
ICK	LEASE OWNER
OWNER(100)	HOLDING ARRAY OF LEASE OWNERS
GPRICE(5)	HOLDING ARRAY FOR A PARTICIPANT'S INTANGIBLE ASSETS



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

BALANCE SHEET HEADING

I	PLAYER NUMBER
PERIOD	PERIOD NUMBER

FINANCIAL CARRY-OVER (LIST 1)

WCK	CASH
WCK1	SHORT TERM SECURITIES HELD
SUFF1	LONG TERM LOANS OUTSTANDING
SUFF2	SHORT TERM LOANS OUTSTANDING
TANGE	EMERGENCY LOANS OUTSTANDING
PROD	VALUE OF OUTSTANDING STOCK AT PAR VALUE
TIME	MARKET PRICE OF STOCK
FOVHM	SHARES OF STOCK OUTSTANDING
GOR	FIRM'S LIQUIDITY
PRES	EXCESS EQUIPMENT UNSOLD
GASALW	CAPITAL SURPLUS
OILALW	RETAINED EARNINGS OR PROPRIETARY INTEREST
TAXSUR	TAX SURPLUS FROM PREVIOUS PERIODS

COMPUTATION OF INTEREST CHARGES

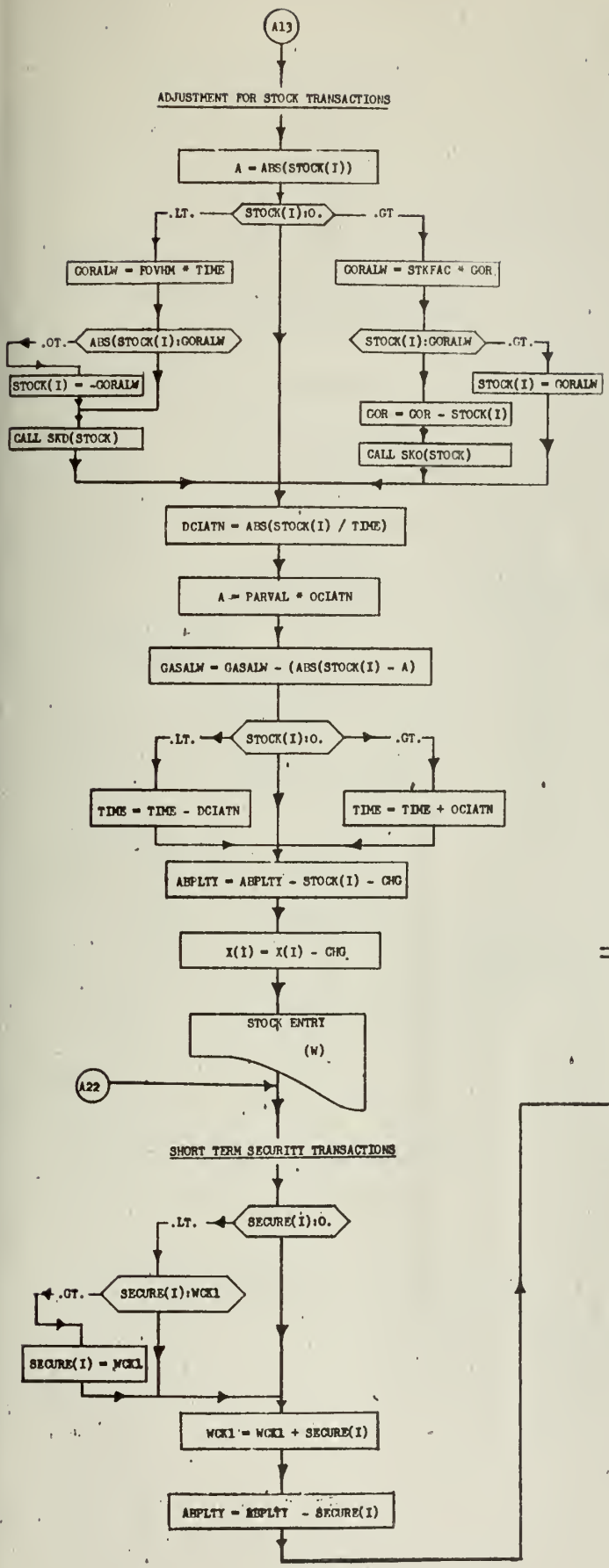
PD	NUMBER OF MONTHS IN A PERIOD
SEVTAX	EMERGENCY LOAN INTEREST
DCPLTY	INTEREST CHARGES FOR LONG TERM LOANS
ENTRY	TOTAL INTEREST CHARGES FOR A PERIOD

DIVIDEND PAYMENT

FIRM(5)	ARRAY FOR THE RETENTION OF COMPANY ORGANIZATION
DIV	DIVIDENDS DECLARED PER SHARE OF OUTSTANDING STOCK FOR THE PERIOD (DOLLAR VALUE PER SHARE)

VARIABLES ZEROED

ALL OF THE ABOVE VARIABLES



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

STOCK TRANSACTIONS

STOCK(5)	RETENTION ARRAY FOR STOCK SALES OR PURCHASES BY PLAYERS
CORALW	MAXIMUM STOCK SALE OR PURCHASE ALLOWED
STKFAC	
DCIATN	NUMBER OF SHARES PURCHASED
PARVAL	PAR VALUE OF ALL CORPORATE STOCK
A	VALUE OF STOCK PURCHASE AT PAR VALUE
CHG	CHARGE FOR STOCK PURCHASE OR ISSUANCE

STOCK ENTRY

TIME	TOTAL NUMBER OF SHARES OF STOCK OUTSTANDING
OCIATN	NUMBER OF SHARES PURCHASED

SHORT TERM SECURITIES TRANSACTIONS

SECURE(5)	RETENTION ARRAY FOR PLAYER'S SECURITIES REQUESTS

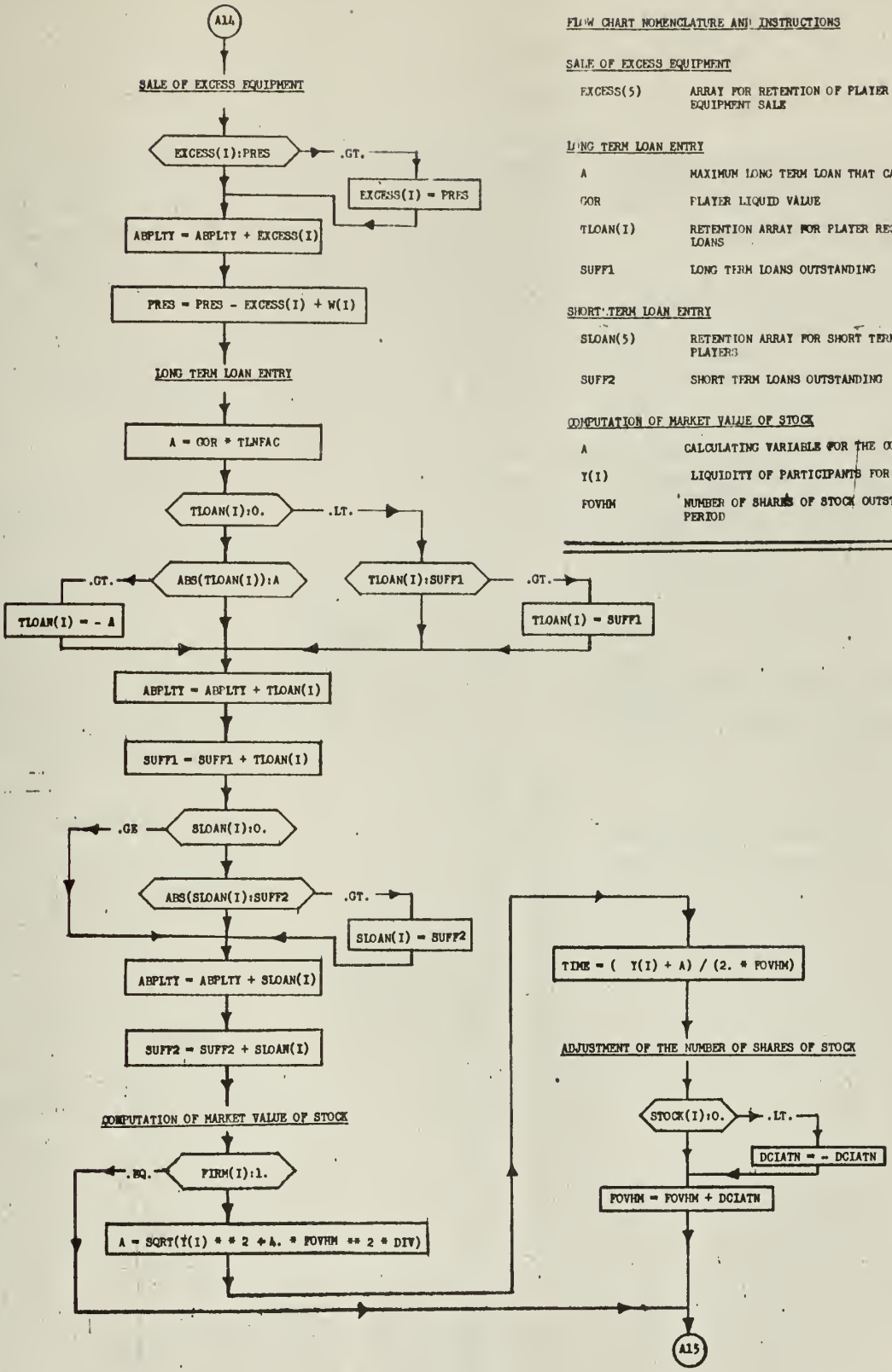
DIVIDEND EARNINGS

SECDIV	ANNUAL DIVIDEND RATE APPLICABLE TO SHORT TERM SECURITIES
ENTRY	AMOUNT OF SHORT TERM SECURITY DIVIDENDS EARNED

SUBROUTINE SKD

ARGUMENTS

SCBRAC(7)	INTERMEDIATE LIMITS OF THE SECURITY BRACKETS FOR THE DETERMINATION OF CHARGE FOR A STOCK TRANSACTION
SLRATE(8)	PERCENTAGES APPLICABLE TO AN AMOUNT OF A STOCK TRANSACTION FOR THE DETERMINATION OF THE STOCK CHARGE (A SINGLE PERCENTAGE FOR EACH OF THE BRACKETS)
BIRATE(8)	CHARGE PERCENTAGES APPLICABLE TO THE PURCHASE OF STOCK
A	AMOUNT OF A TRANSACTION
CHG	CHARGE APPLICABLE TO A TRANSACTION



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

SALE OF EXCESS EQUIPMENT

EXCESS(5)	ARRAY FOR RETENTION OF PLAYER REQUESTS FOR EXCESS EQUIPMENT SALE

LONG TERM LOAN ENTRY

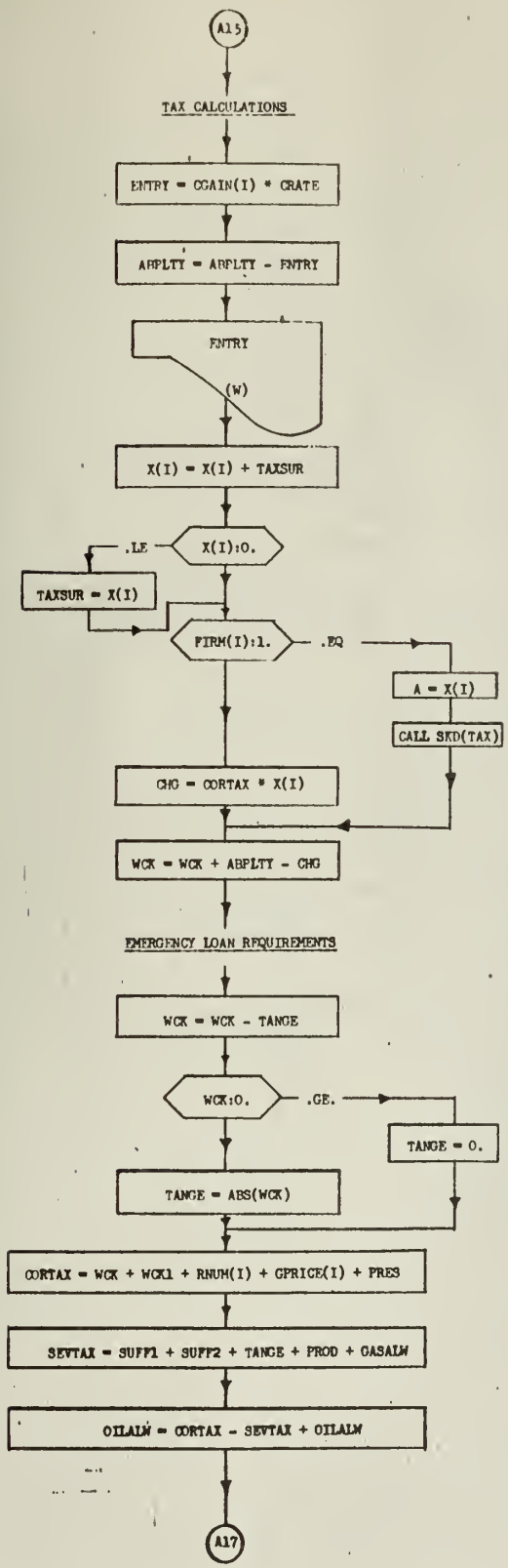
A	MAXIMUM LONG TERM LOAN THAT CAN BE INCURRED
COR	PLAYER LIQUID VALUE
TLOAN(I)	RETENTION ARRAY FOR PLAYER REQUESTS FOR LONG TERM LOANS
SUFF1	LONG TERM LOANS OUTSTANDING

SHORT TERM LOAN ENTRY

SLOAN(5)	RETENTION ARRAY FOR SHORT TERM LOANS REQUESTED BY PLAYERS
SUFF2	SHORT TERM LOANS OUTSTANDING

COMPUTATION OF MARKET VALUE OF STOCK

A	CALCULATING VARIABLE FOR THE COMBINATION OF OPERATIONS
Y(I)	LIQUIDITY OF PARTICIPANTS FOR THE CURRENT PERIOD
FOVHM	NUMBER OF SHARES OF STOCK OUTSTANDING AT CLOSE OF THE PERIOD



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

TAX CALCULATIONS

CAPITAL GAINS TAX

CGAIN(5)	HOLDING ARRAY FOR CAPITAL GAINS ACCUMULATED BY PLAYERS DURING A ROUND OF PLAY
CRATE	CAPITAL GAINS TAX RATE EXPRESSED IN A DECIMAL PERCENTAGE
ENTRY	AMOUNT OF CAPITAL GAINS TAX CALCULATED

FEDERAL INCOME TAX

TAXSUR	ACCUMULATION OF TAX SURPLUS OF PARTICIPANTS
X(5)	HOLDING ARRAY FOR TAXABLE INCOME
A	TRANSPOSITION VARIABLE
CORTAX	TAX RATE APPLICABLE TO CORPORATE EARNINGS
CHG	AMOUNT OF INCOME TAX CALCULATED

ARGUMENTS FOR SUBROUTINE SKD(TAX)

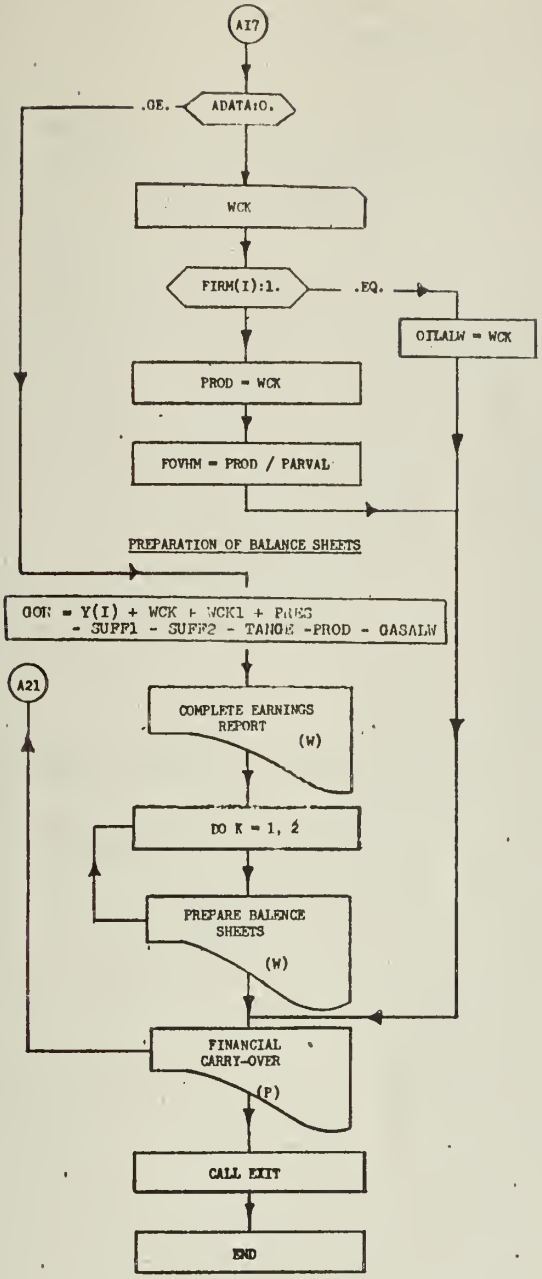
TBRAC(7)	VALUES DEFINING THE INTERMEDIATE BRACKETS OF THE PERSONAL TAX SCHEDULE
TRATE(8)	TAX DECIMAL PERCENTAGES APPLICABLE TO EACH OF THE TAX BRACKETS
A	AMOUNT OF TAXABLE INCOME
CHG	AMOUNT OF FEDERAL INCOME TAX CALCULATED

EMERGENCY LOAN REQUIREMENTS

WCK	CASH
TANGE	EMERGENCY LOAN BROUGHT FORWARD FROM A PREVIOUS PERIOD (FIRST USE)
TANGE	EMERGENCY LOAN REQUIREMENT FOR A CURRENT PERIOD (SECOND USE)

OTHER VARIABLES

CORTAX	TOTAL OF ASSETS HELD BY A PLAYER
SEVTAX	TOTAL LIABILITIES OF A PARTICIPANT (LESS RETAINED EARNINGS)
OILALW	RETAINED EARNINGS OF A PARTICIPANT



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

PRE-PLAY FINANCIAL ENTRY MANIPULATION

ADATA	PERIOD CONTROL INDICATOR
WCK	ORGANIZATIONAL FUNDS ALLOTTED PARTICIPANTS
OILALW	RETAINED EARNINGS OR IN ITS USE HERE A PROPRIETARY INTEREST
FOVHM	NUMBER OF SHARES OF CORPORATE STOCK AT PAR VALUE REPRESENTED BY THE ORAGNIZATIONAL ALLOCATION FOR CORPORATE ORGANIZATIONS

PREPARATION OF BALANCE SHEETS

BALANCE SHEET ENTRIES

WCK	CASH
WCK1	SHORT TERM SECURITIES HELD
PRES	EXCESS EQUIPMENT UNSOLD
GPRICE(I)	INTANGIBLE ASSETS HELD BY A PARTICIPANT
RNUM(I)	TANGIBLE ASSETS HELD BY A PARTICIPANT
GORTAX	TOTAL ASSETS
SUFF1	LONG TERM LOANS OUTSTANDING
SUFF2	SHORT TERM LOANS OUTSTANDINT
TANGE	EMERGENCY LOANS OUTSTANDING
PROD	CORPORATE STOCK AT PAR-VALUE
CASALW	CAPITAL SURPLUS
OILALW	RETAINED EARNINGS OR PROPRIETARY INTEREST
SEVTAX	TOTAL LIABILITIES LESS RETAINED EARNINGS OR PROPRIETARY INTEREST
CORTAX	TOTAL LIABILITIES

COMPLETION OF EARNINGS REPORTS

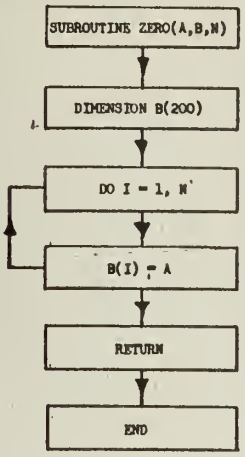
ENTRY	CAPITAL GAINS TAX PAID
CHG	FEDERAL INCOME TAX PAID
X(I)	TAXABLE INCOME
HOLD(I)	GROSS REVENUE FROM PRODUCTION
W(I)	EXCESS EQUIPMENT REALIZED FROM LEASE ABANDONMENT
GOR	COMPANY'S LIQUID VALUE
V(I)	DEPRECIATION TAKEN DURING A PERIOD
Z(I)	CUMULATIVE DEPLETION ALLOWANCE CHARGED AS AN INCOME TAX DEDUCTION

FINANCIAL CARRY-OVER

SEE FINANCIAL READ-IN FROM CARRY-OVER DECK

FLOW CHARTS CONTROL PROGRAM SUBROUTINES

SUBROUTINE FOR THE ASSIGNMENT OF A SPECIFIC VALUE TO ALL ELEMENTS OF AN ARRAY



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

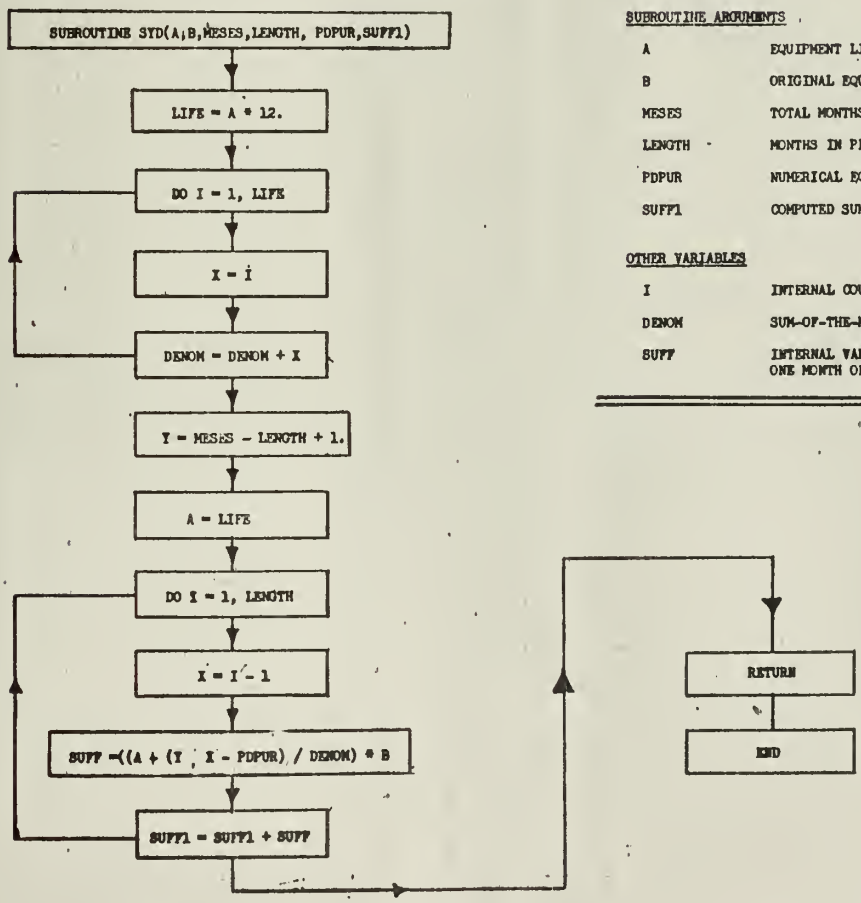
SUBROUTINE ARGUMENTS

A	VALUE ASSIGNED VARIABLE B
B	VARIABLE TO BE ASSIGNED SPECIFIC VALUE TO ALL ELEMENTS OF AN ARRAY
N	SUBSCRIPTION OF B

OTHER VARIABLES

I	INTERNAL COUNTER

SUBROUTINE FOR THE COMPUTATION OF SUM-OF-THE-YEAR-DIGITS METHOD


SUBROUTINE SYD(A,B,MESES,LENGTH, PDPUR,SUFF1)
LIFE = A * 12.
DO I = 1, LIFE
X = I
DENOM = DENOM + X
Y = MESES - LENGTH + 1.
A = LIFE
DO I = 1, LENGTH
X = Y - 1
SUFF =((A + (Y , X - PDPUR) / DENOM) * B
SUFF1 = SUFF1 + SUFF
RETURN
END

SUBROUTINE ARGUMENTS

A	EQUIPMENT LIFE IN YEARS
B	ORIGINAL EQUIPMENT COST
MESES	TOTAL MONTHS OF GAME PLAY
LENGTH	MONTHS IN PLAY PERIOD
PDPUR	NUMERICAL EQUIVALENT OF MONTH OF EQUIPMENT PURCHASE
SUFF1	COMPUTED SUM-OF-THE-MONTHS-DIGITS DEPRECIATION

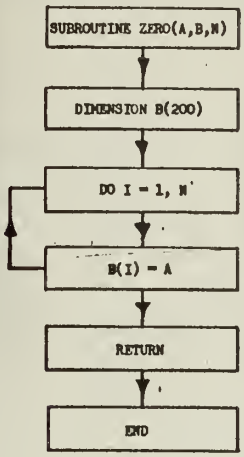
OTHER VARIABLES

I	INTERNAL COUNTER
DENOM	SUM-OF-THE-MONTHS OF EQUIPMENT LIFE
SUFF	INTERNAL VARIABLE REPRESENTING DEPRECIATION FOR ONE MONTH OF A PERIOD

SUBROUTINES USED BY THE CONTROL PROGRAM

FLOW CHARTS CONTROL PROGRAM SUBROUTINES

SUBROUTINE FOR THE ASSIGNMENT OF A SPECIFIC VALUE TO ALL ELEMENTS OF AN ARRAY



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

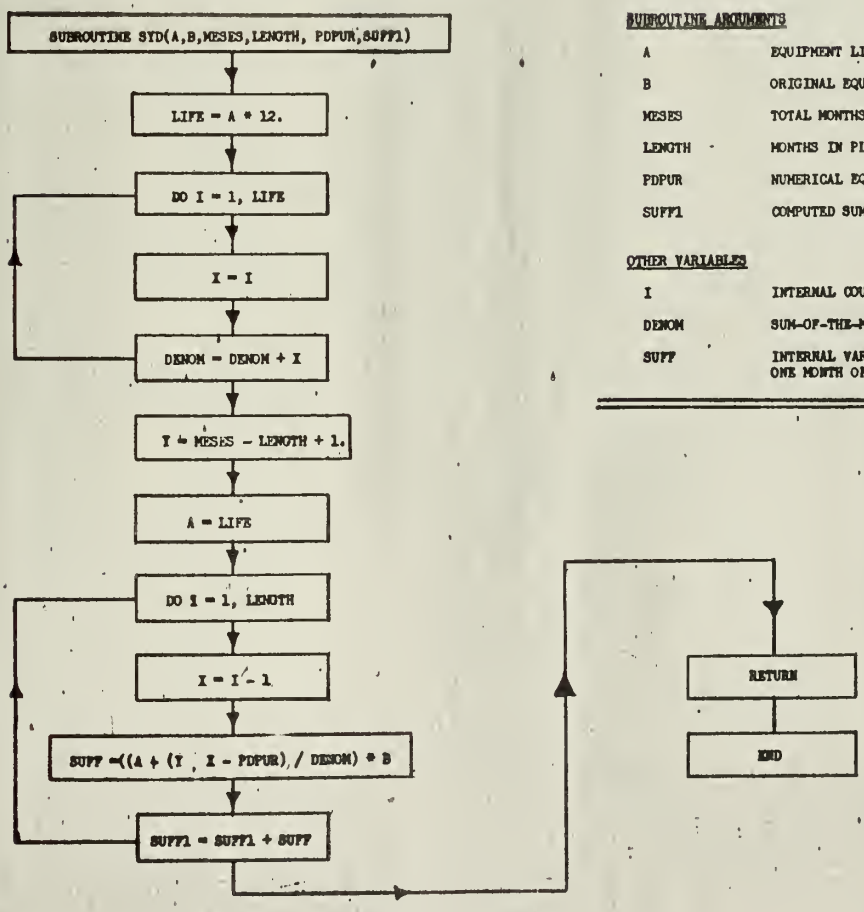
SUBROUTINE ARGUMENTS

A	VALUE ASSIGNED VARIABLE B
B	VARIABLE TO BE ASSIGNED SPECIFIC VALUE TO ALL ELEMENTS OF AN ARRAY
N	SUBSCRIPTION OF B

OTHER VARIABLES

I	INTERNAL COUNTER

SUBROUTINE FOR THE COMPUTATION OF SUM-OF-THE-YEAR-DIGITS METHOD


SUBROUTINE SYD(A,B,MESES,LENGTH, PDPUR,SUFF1)
LIFE = A * 12.
DO I = 1, LIFE
I = I
DENOM = DENOM + I
I = MESES - LENGTH + 1.
A = LIFE
DO I = 1, LENGTH
I = I - 1
SUFF =((A + (I , I - PDPUR), / DENOM) * B
SUFF1 = SUFF1 + SUFF
RETURN
END

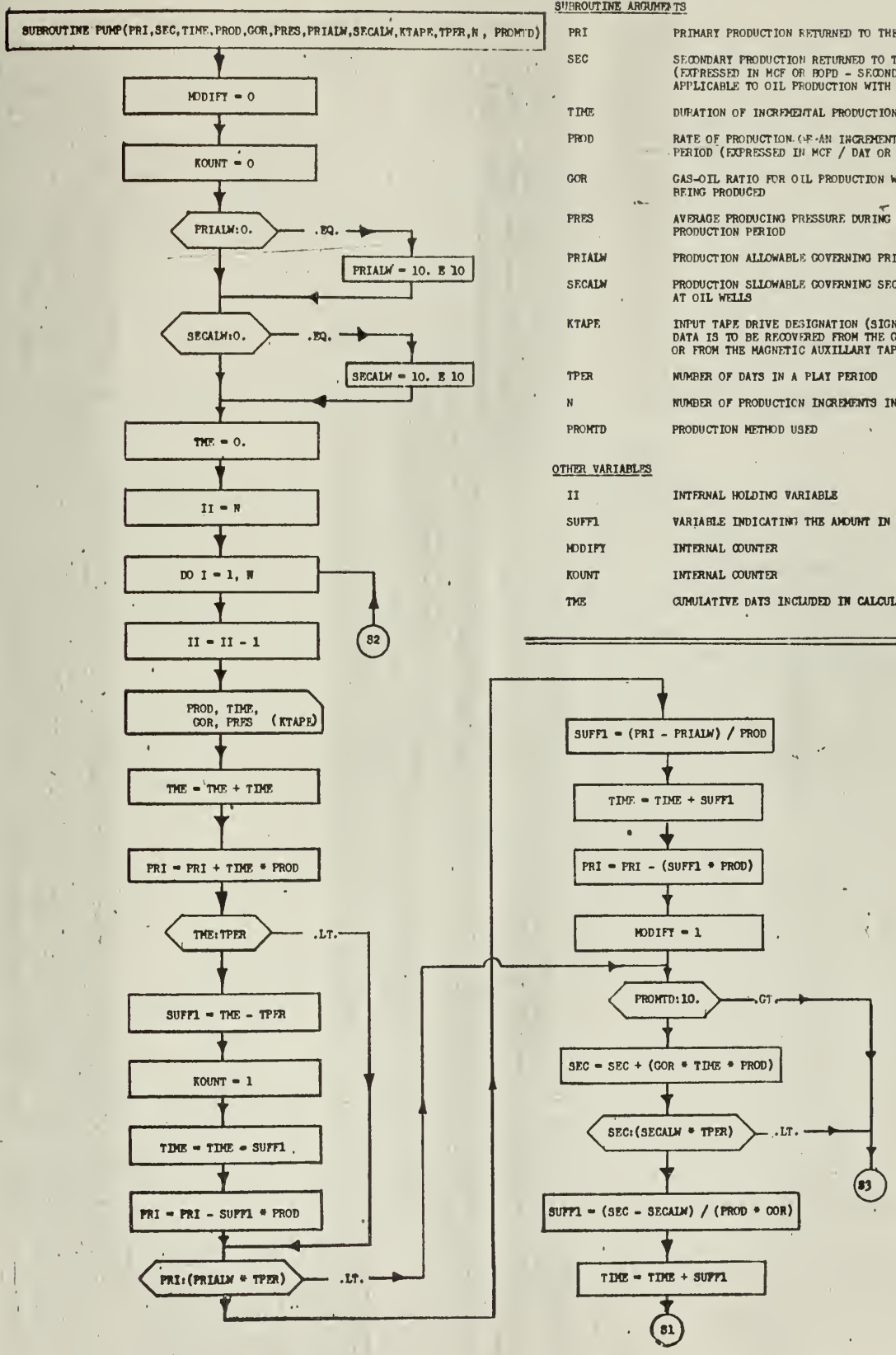
SUBROUTINE ARGUMENTS

A	EQUIPMENT LIFE IN YEARS
B	ORIGINAL EQUIPMENT COST
MESES	TOTAL MONTHS OF GAME PLAY
LENGTH	MONTHS IN PLAY PERIOD
PDPUR	NUMERICAL EQUIVALENT OF MONTH OF EQUIPMENT PURCHASE
SUFF1	COMPUTED SUM-OF-THE-MONTHS-DIGITS DEPRECIATION

OTHER VARIABLES

I	INTERNAL COUNTER
DENOM	SUM-OF-THE-MONTHS OF EQUIPMENT LIFE
SUFF	INTERNAL VARIABLE REPRESENTING DEPRECIATION FOR ONE MONTH OF A PERIOD

SUBROUTINE FOR THE CALCULATION OF PRODUCTION



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

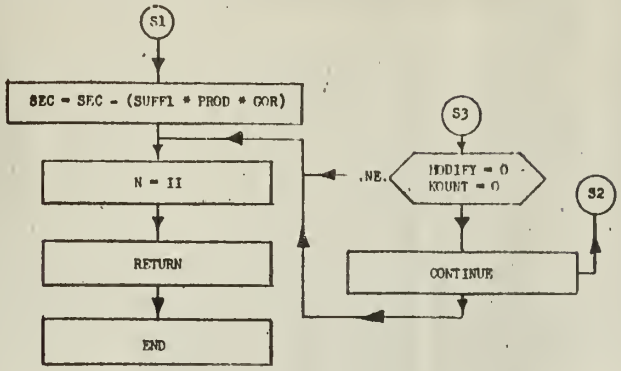
SUBROUTINE ARGUMENTS

PRI	PRIMARY PRODUCTION RETURNED TO THE MAIN LINE (MCF OR BOPD)
SEC	SECONDARY PRODUCTION RETURNED TO THE MAIN LINE (EXPRESSED IN MCF OR BOPD - SECONDARY PRODUCTION IS APPLICABLE TO OIL PRODUCTION WITH SOLUTION GAS ONLY)
TIME	DURATION OF INCREMENTAL PRODUCTION PERIOD (DAYS)
PROD	RATE OF PRODUCTION OF AN INCREMENTAL PRODUCTION PERIOD (EXPRESSED IN MCF / DAY OR BOPD)
GOR	GAS-OIL RATIO FOR OIL PRODUCTION WITH SOLUTION GAS BEING PRODUCED
PRES	AVERAGE PRODUCING PRESSURE DURING AN INCREMENTAL PRODUCTION PERIOD
PRIALW	PRODUCTION ALLOWABLE GOVERNING PRIMARY PRODUCTION
SECALW	PRODUCTION ALLOWABLE GOVERNING SECONDARY GAS PRODUCTION AT OIL WELLS
KTAPE	INPUT TAPE DRIVE DESIGNATION (SIGNIFIES IF PRODUCTION DATA IS TO BE RECOVERED FROM THE GAME CARRY-OVER DECK OR FROM THE MAGNETIC AUXILLARY TAPE UNIT)
TPER	NUMBER OF DAYS IN A PLAY PERIOD
N	NUMBER OF PRODUCTION INCREMENTS INCLUDED FOR A LEASE
PROMTD	PRODUCTION METHOD USED

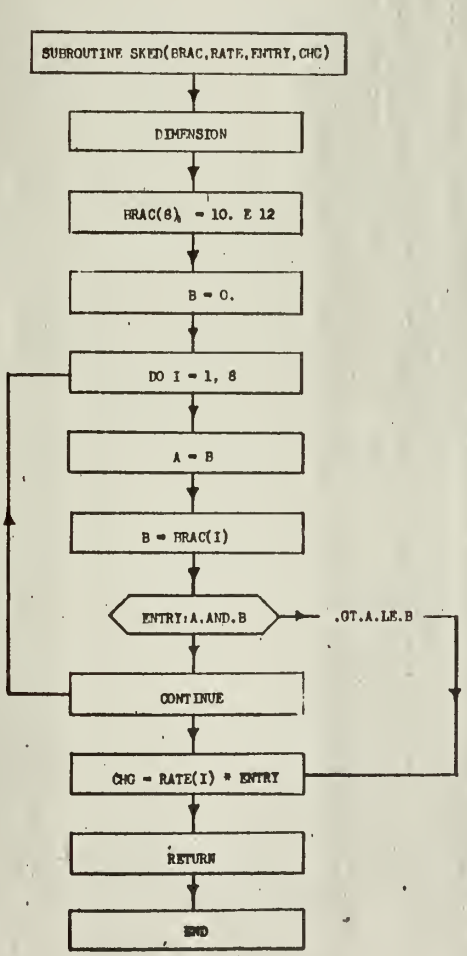
OTHER VARIABLES

II	INTERNAL HOLDING VARIABLE
SUFF1	VARIABLE INDICATING THE AMOUNT IN EXCESS OF AN ALLOWABLE
MODIFY	INTERNAL COUNTER
KOUNT	INTERNAL COUNTER
TME	CUMULATIVE DAYS INCLUDED IN CALCULATIONS

SUBROUTINE FOR THE CALCULATION OF PRODUCTION (CONTINUATION)



SUBROUTINE FOR DETERMINATION OF STOCK TRANSACTION CHARGE AND PERSONAL TAX



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

SUBROUTINE SKD

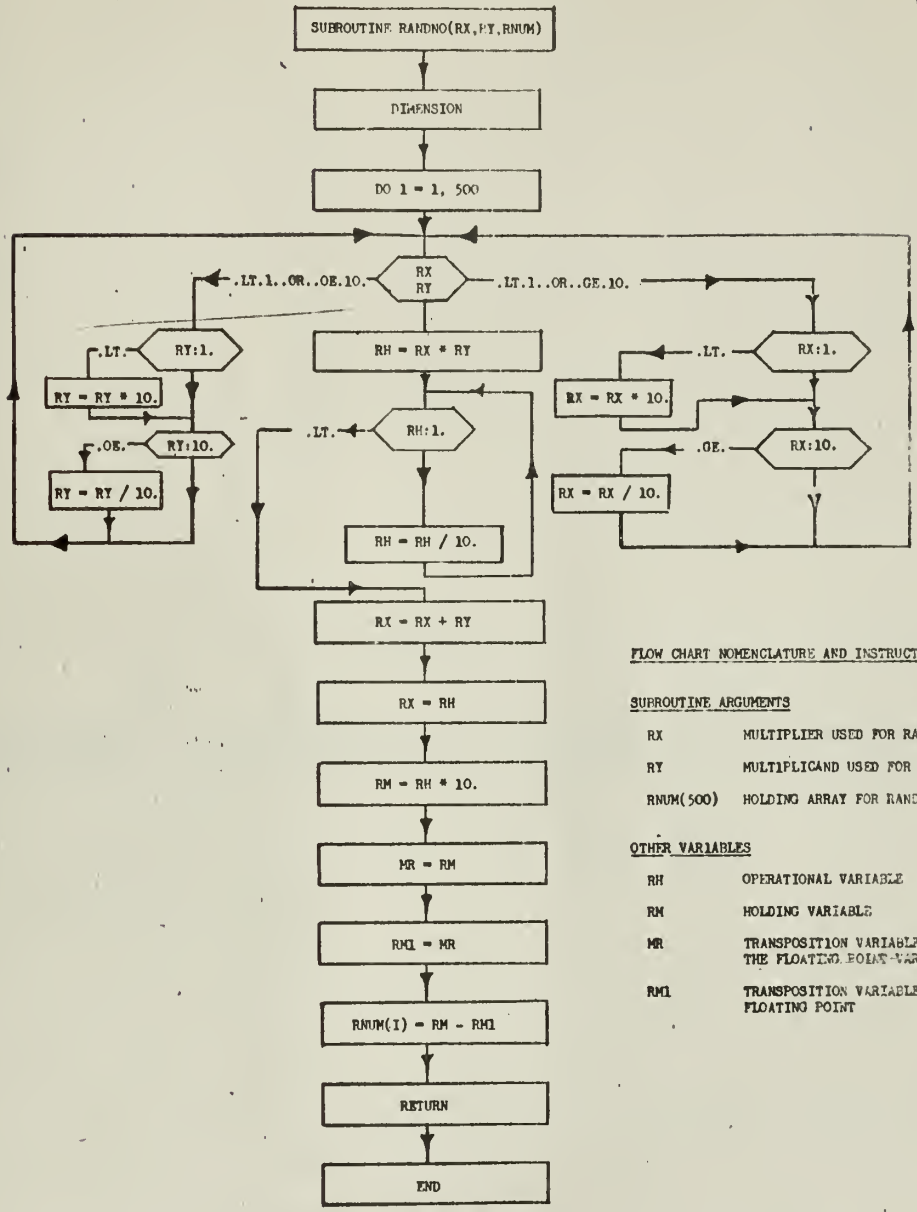
SUBROUTINE ARGUMENTS

BRAC(7)	BRACKETING VALUES
RATE(8)	PERCENTAGE CHARGES PERTINENT TO EACH BRACKET
ENTRY	THE AMOUNT OF A TRANSACTION
CHG	CHARGE RETURNED TO THE MAINLINE

OTHER VARIABLES

A	INTERNAL VARIABLE USED TO HOLD BRACKETING VALUES
B	" " "

SUBROUTINE FOR GENERATION OF RANDOM NUMBERS



FLOW CHART NOMENCLATURE AND INSTRUCTIONS

SUBROUTINE ARGUMENTS

RX	MULTIPLIER USED FOR RANDOM NUMBER GENERATION
RY	MULTIPLICAND USED FOR RANDOM NUMBER GENERATION
RNUM(500)	HOLDING ARRAY FOR RANDOM NUMBERS GENERATED

OTHER VARIABLES

RH	OPERATIONAL VARIABLE
RM	HOLDING VARIABLE
MR	TRANSPOSITION VARIABLE USED TO TRUNCATE THE FLOATING POINT-VARIABLE RM
RM1	TRANSPOSITION VARIABLE USED TO CHANGE MR TO FLOATING POINT

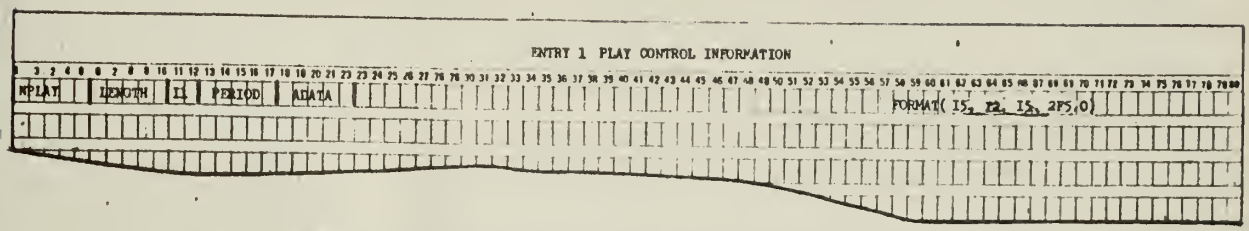
APPENDIX B

INSTRUCTIONS FOR THE PREPARATION OF THE CONTROL PROGRAM'S INPUT

APPENDIX B

INSTRUCTIONS FOR PREPARATION OF THE CONTROL PROGRAM INPUT

PRE-PLAY INPUT



NPLAY — NUMBER OF PARTICIPATING COMPANIES INVOLVED IN PLAY

ENTRY: FROM 1 TO 5 - RIGHT HAND JUSTIFIED PUNCHED WITHOUT A DECIMAL INDICATED

LENGTH — NUMBER OF MONTHS IN A PLAY PERIOD

ENTRY: 0 - RIGHT HAND JUSTIFIED PUNCHED WITHOUT A DECIMAL INDICATED

I1 — AUXILLARY MAGNETIC TAPE DRIVE DESIGNATION USED FOR RETENTION OF NEW AND MODIFIED PRODUCTION DATA

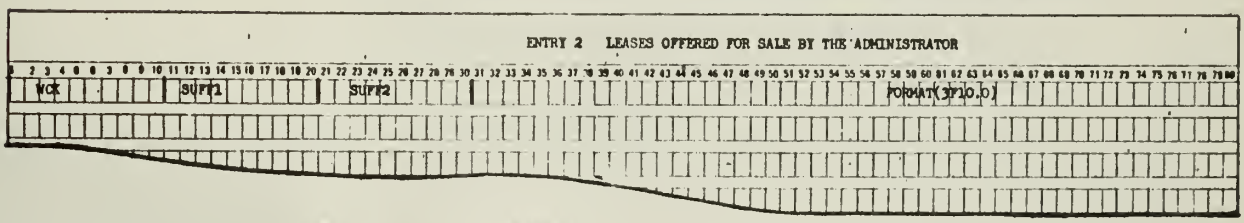
ENTRY: FOR THE PRE-PLAY PERIOD THIS ENTRY HAS NO SIGNIFICANCE, THEREFORE NO ENTRY NEED BE MADE

PERIOD — SEQUENTIAL PLAY PERIOD NUMBER

ENTRY: 0. - PUNCHED ANYWHERE WITHIN ITS FIELD WITH A DECIMAL INDICATED AFTER THE LAST DIGIT

ADATA — INPUT CONTROL

ENTRY: 0. - PUNCHED ANYWHERE WITHIN ITS FIELD WITH A DECIMAL INDICATED AFTER THE LAST DIGIT



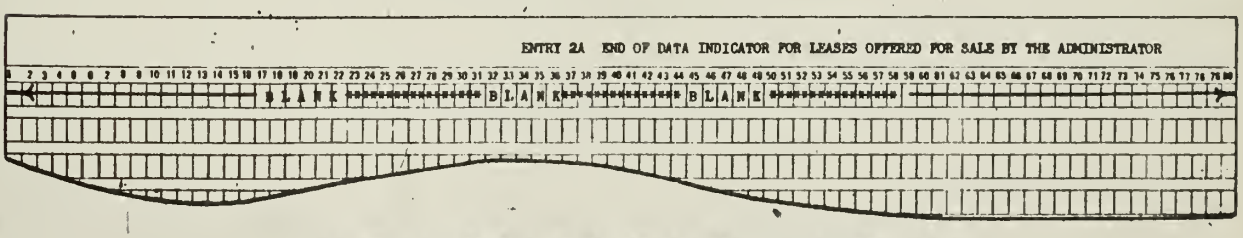
WCK — LEASE NUMBER

SUFF1 — LEASE ACREAGE

SUFF2 — LEASE PER ACRE ANNUAL DELAY RENTAL (MINIMUM BID ACCEPTED)

ENTRY: ALL ENTRIES ARE MADE ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH A DECIMAL INDICATED AFTER THE LAST DIGIT

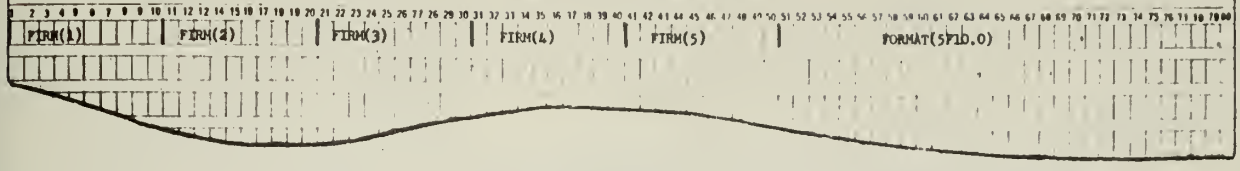
NOTE: THERE IS NO RESTRICTION AS TO THE NUMBER OF LEASES THAT CAN BE OFFERED DURING A ROUND; HOWEVER AT NO TIME CAN THE TOTAL NUMBER OF LEASES OFFERED EXCEED THE NUMBER AS WILL BE SPECIFIED IN THE PERMINENT GAME PARAMETERS. EACH LEASE OFFERED MUST BE ENTERED ON A SEPARATE DATA CARD.



ENTRY CARD SIGNIFYING END OF THE ADMINISTRATOR'S INPUT OF LEASES OFFERED FOR SALE

ENTRY: THE ENTIRE CARD IS LEFT BLANK

ENTRY 3 COMPANY ORGANIZATIONS



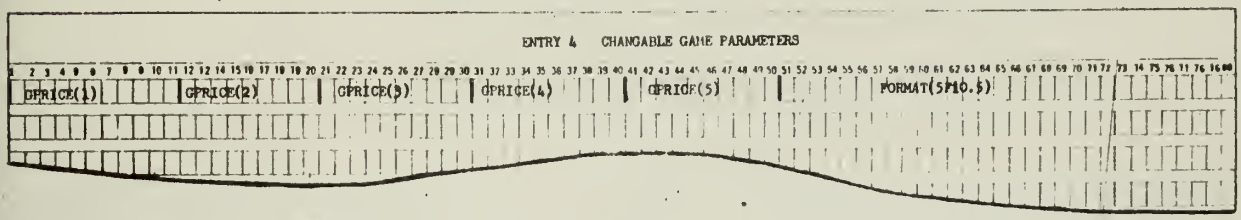
FIRM(I)
I = 1, NPLAY — COMPANY STRUCTURE ELECTED BY PARTICIPANTS FOR THE FIRMS UNDER THEIR MANAGEMENT

ENTRY: 1. PROPRIETARY ORGANIZATION

2. CORPORATE ORGANIZATION

ENTRIES CAN BE MADE ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH A DECIMAL INDICATED AFTER THE LAST DIGIT

ENTRY 4 CHANGABLE GAME PARAMETERS

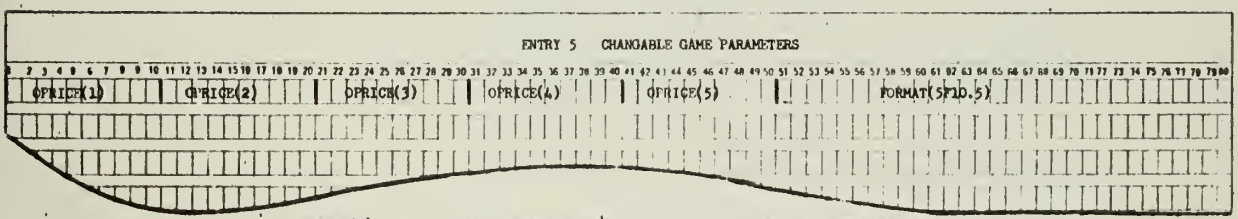


GPRICE(I)
I = 1, 5 — SELLING PRICE FOR GAS PRODUCTION FROM GAS WELLS, THE PRICE BEING DICTATED BY THE QUALITY OF THE PRODUCTION

ENTRY: SALE PRICE PER MCF OF GAS WITH THIS PRICE NOT EXCEEDING $99,999.99 - THIS PRICE CAN BE INDICATED ANYWHERE IN ITS RESPECTIVE FIELD WITH A DECIMAL APPROPRIATELY INDICATED

NOTE: IF IT IS DESIRED TO DESIGNATE LESS THAN 5 VALUES FOR THE GAS PRICE THIS IS PERMISSABLE PROVIDED ENTRIES NOT DESIRED ARE SET AT 0.

ENTRY 5 CHANGABLE GAME PARAMETERS



OPRICE(I)
I = 1, 5 — SELLING PRICE FOR OIL AND ITS SOLUTION GAS AS PRODUCED FROM OIL WELLS - THIS PRICE IS DEPENDENT ON THE QUALITY OF THE PRODUCTION

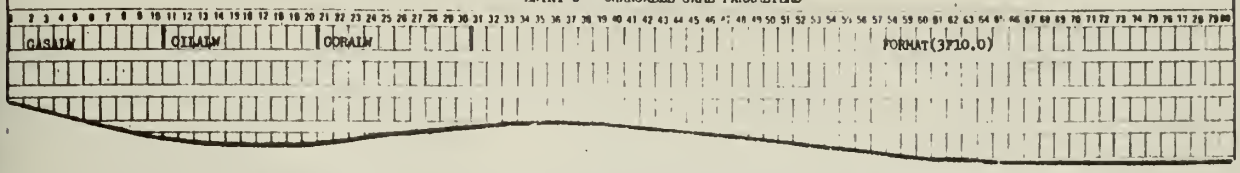
ENTRY: SALE PRICE PER BARREL OF OIL AND MCF OF GAS - THESE PRICES NOT TO EXCEED $9,999.99 PER BARREL FOR OIL AND $9.99 PER MCF FOR GAS WITH EACH EXPRESSED IN WHOLE CENTS HAVING DECIMALS APPROPRIATELY INDICATED

CONSTRUCTION OF ENTRY:

SALE PRICE OF OIL + (SALE PRICE OF GAS / 1000.)

ENTRIES CAN BE PUNCHED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS

ENTRY 6 CHANGABLE GAME PARAMETERS



GASALW — PRODUCTION ALLOWABLE EXPRESSED IN MCF PER DAY PER WELL FOR GAS WELL PRODUCTION

OILALW — PRODUCTION ALLOWABLE EXPRESSED IN BARRELS OF OIL PER DAY PER WELL FOR OIL WELL PRODUCTION

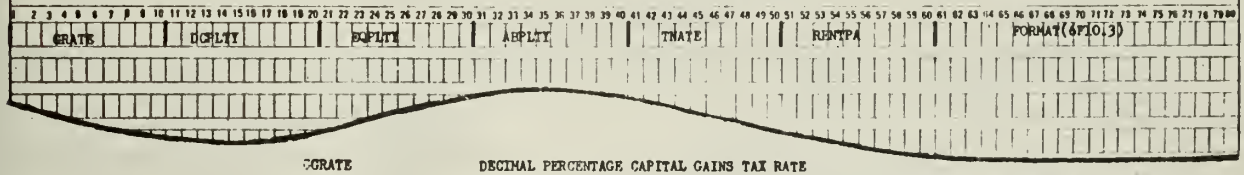
CORALW — GAS-OIL RATIO ALLOWABLE EXPRESSED IN MCF OF GAS PER DAY PER WELL FOR OIL WELL PRODUCTION HAVING SOLUTION GAS INCLUDED IN THE OIL PRODUCED

ENTRY: EACH ENTERED ANYWHERE IN THEIR RESPECTIVE FIELDS WITH A DECIMAL APPROPRIATELY INDICATED

RESTRICTIONS: EACH OF THE PRODUCTION ALLOWABLES ARE RESTRICTED TO A MAXIMUM OF 9,999,999. UNITS PER WELL PER DAY

NOTE: SHOULD IT BE DESIRED NOT TO ESTABLISH ANY OR ALL OF THE PRODUCTION ALLOWABLES THIS CAN BE ACCOMPLISHED BY SETTING THE APPROPRIATE VALUES TO 0.

ENTRY 7 PERMINENT GAME PARAMETERS



CGRATE — DECIMAL PERCENTAGE CAPITAL GAINS TAX RATE

DCPLTY — DOLLAR VALUE PENALTY FOR AN UNAUTHORIZED CHANGE IN THE METHOD SPECIFIED FOR COMPUTING TANGIBLE EQUIPMENT DEPRECIATION

EQPLTY — DECIMAL PERCENTAGE THAT WHEN APPLIED TO NORMAL STRAIGHT-LINE DEPRECIATION RESULTS IN THE DOLLAR VALUE OF THE EXTRA MAINTENANCE CHARGE INCURRED FOR USING EQUIPMENT BEYOND ITS SPECIFIED LIFE

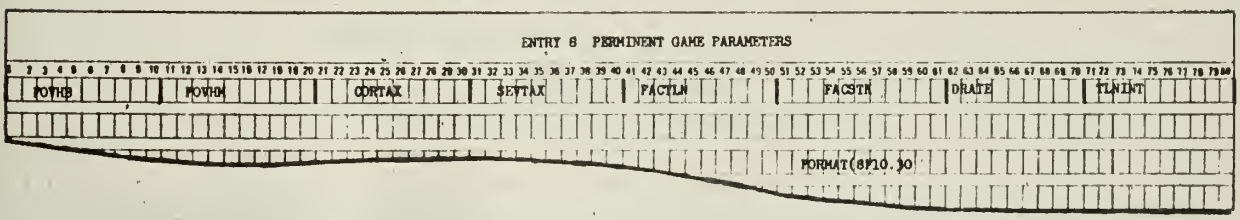
AEPLTY — DOLLAR VALUE PENALTY LEVIED AGAINST PARTICIPANTS ATTEMPTING TO ABANDON A LEASE NOT OWNED BY HIM

TNATE — PRIMARY TERM OF ALL LEASES EXPRESSED IN MONTHS

RENTPA — PERIOD IN MONTHS ALLOWED FOR LEASE DEVELOPMENT BEFORE COMMENCEMENT OF DELAY RENTAL PAYMENTS

ENTRY: ALL VALUES CAN BE ENTERED ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

ENTRY 8 PERMINENT GAME PARAMETERS



FOVHB — ORDINATE INTERCEPT OF THE LINEAR FUNCTION DEFINING FIXED COMPANY OVERHEAD

FOVHM — SLOPE OF THE LINEAR FUNCTION DEFINING FIXED COMPANY OVERHEAD

CORTAX — DECIMAL PERCENTAGE CORPORATE TAX RATE

SEVTAX — DECIAML PERCENTAGE SEVERENCE OR PRODUCTION TAX RATE

FACTLN — DECIMAL PERCENTAGE THAT WHEN APPLIED TO A COMPANY'S LIQUID VALUE DEFINES THE MAXIMUM LONG TERM LOAN THAT CAN BE INCURRED DURING A PLAY PERIOD

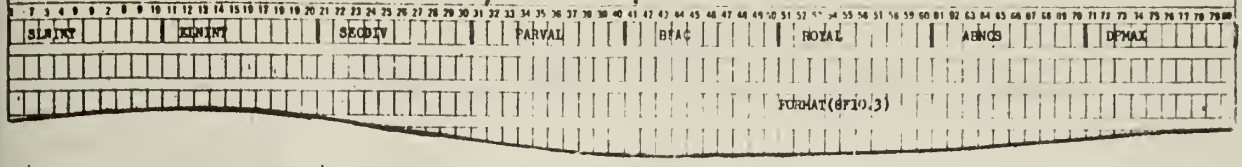
FACSTK — DECIMAL PERCENTAGE THAT WHEN APPLIED TO A COMPANY'S LIQUID VALUE DEFINES THE MAXIMUM STOCK SALE PERMISSABLE DURING A PLAY PERIOD

DRATE — DECIAMAL PERCENTAGE USED AS THE DISCOUNT RATE FOR THE COMPUTATION OF A COMPANY'S LIQUID VALUE

TLNINT — ANNUAL INTEREST RATE FOR LONG TERM LOANS EXPRESSED AS A DECIMAL PERCENTAGE

ENTRY: ALL OF THE ENTRIES CAN BE INDICATED ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

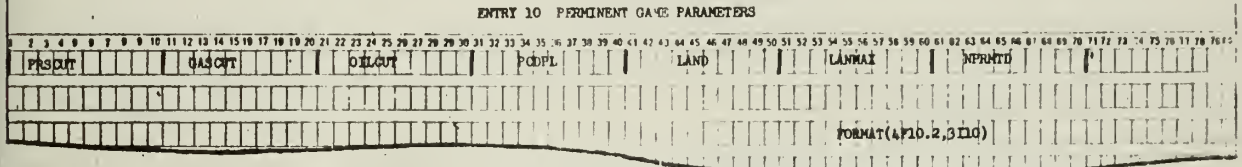
ENTRY 9 PERMINENT GAME PARAMETERS



SLNINT	DECIMAL PERCENTAGE ANNUAL INTEREST RATE FOR SHORT TERM LOANS
FLNINT	MONTHLY INTEREST RATE FOR EMERGENCY LOANS EXPRESSED AS A DECIMAL PERCENTAGE
SECDIV	ANNUAL DIVIDEND RATE FOR SHORT TERM SECURITIES EXPRESSED AS A DECIMAL PERCENTAGE
PARVAL	DOLLAR VALUE ASSIGNED AS THE PAR VALUE OF ALL CORPORATE STOCK
BFAC	MULTIPLE THAT WHEN APPLIED TO A LEASE'S DELAY RENTAL RESULTS IN THE LEASE PURCHASE BONUS THAT MUST BE PAID BY A LESSEE
ROYAL	DECIMAL PORTION OF GROSS PRODUCTION PAID AS LAND OWNER'S ROYALTY TO A LESSOR
AFNCS	PER WELL DOLLAR VALUE COST FOR LEASE ABANDONMENT
DPMAX	DECIMAL PERCENTAGE THAT WHEN APPLIED TO THE TAXABLE INCOME OF A LEASE'S PRODUCTION DEFINES THE MAXIMUM DOLLAR VALUE OF PERCENTAGE DEPLETION THAT CAN BE CLAIMED FOR TAX PURPOSES

ENTRY: ALL ENTRIES CAN BE MADE ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

ENTRY 10 PERMINENT GAME PARAMETERS



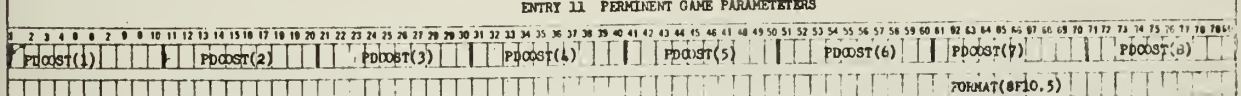
PRSCUT	MINIMUM AVERAGE GAS WELL PRODUCTION PRESSURE ALLOWABLE FOR ENTRY OF PRODUCTION INTO A TRANSMISSION LINE
GASCUT	AVERAGE ECONOMIC CUT-OFF FOR GAS PRODUCTION IN THE CALCULATION OF A PARTICIPANT'S LIQUIDITY EXPRESSED IN MCF PER DAY
OILCUT	SAME AS GASCUT EXCEPT APPLICABLE TO OIL PRODUCTION AND EXPRESSED IN BARRELS PER DAY
PCDPL	DECIMAL PERCENTAGE THAT WHEN APPLIED TO A LEASE'S GROSS PRODUCTION DEFINES THE PERCENTAGE DEPLETION ALLOWANCE
LAND	MAXIMUM NUMBER OF LEASES THAT WILL BE OFFERED FOR SALE DURING A GAME'S PLAY (RESTRICTED TO 100)
LANMAX	MAXIMUM NUMBER OF LEASE BIDS THAT CAN BE SUBMITTED BY A PARTICIPANT IN A SINGLE ROUND OF PLAY (RESTRICTED TO A MAXIMUM OF 8)
NPRMTD	NUMBER OF PRODUCTION METHODS USED IN PLAY

DESIGNATION OF PRODUCTION METHODS:

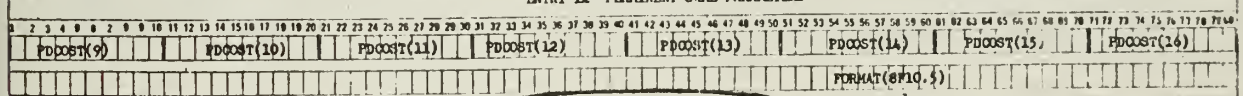
1 - 10 RESERVED FOR OIL PRODUCTION
11 - 20 RESERVED FOR GAS PRODUCTION

NPRMTD MUST BE SET AT THE HIGHEST NUMERICAL DESIGNATION USED

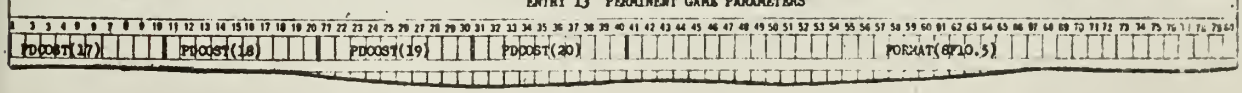
ENTRY 11 PERMINENT GAME PARAMETETERS



ENTRY 12 PERMINENT GAME PARAMETERS



ENTRY 13 PERMINENT GAME PARAMETERS

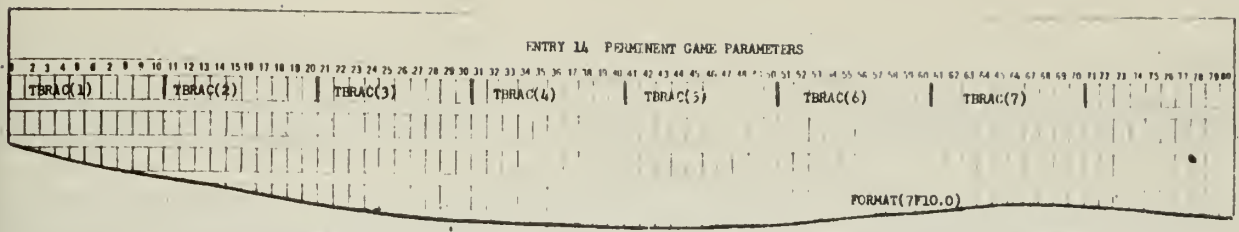


PDCOST(I) I = 1, NPRMTD	PRODUCTION COST

CONSTRUCTION:

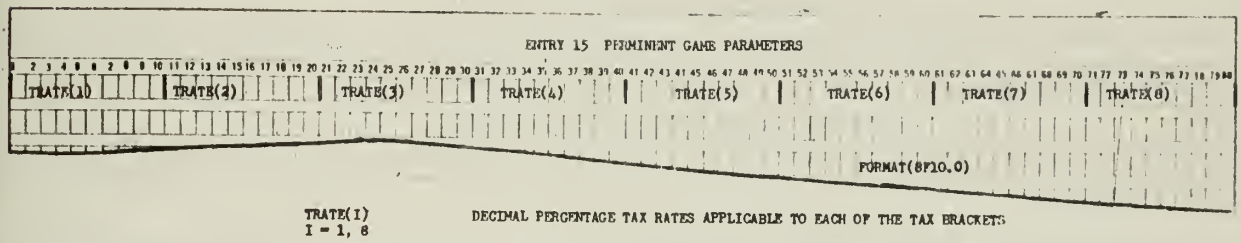
DAILY PER WELL FIXED PRODUCTION COST + (PER UNIT PRODUCED PRODUCTION COST / 1000.)

RESTRICTIONS: DAILY PER WELL FIXED COSTS CANNOT EXCEED $999.99 AND UNIT PRODUCTION COST $9.99 PER MCF FOR GAS OR BARREL FOR OIL



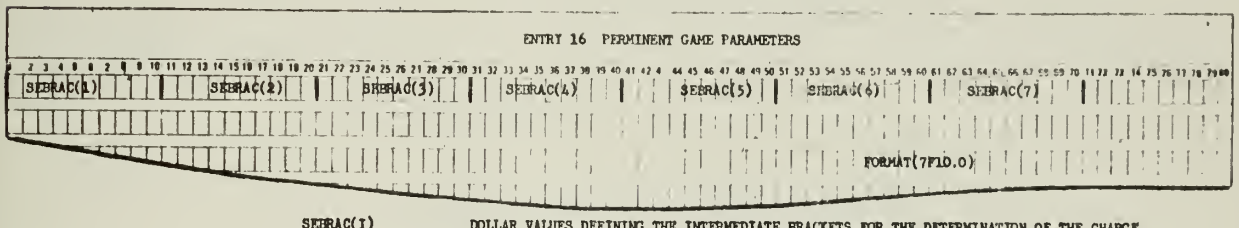
TBRAC(I)
I = 1, 7

DOLLAR VALUES DEFINING THE INTERMEDIATE PERSONAL TAX BRACKETS (THE EXTREMES OF THE BRACKETS ARE SET IN THE CONTROL PROGRAM AS 0. AND)



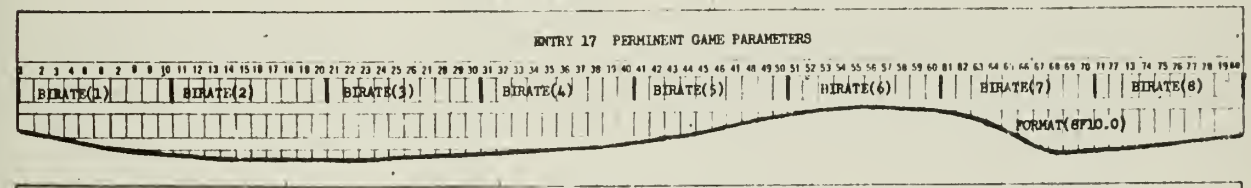
TRATE(I)
I = 1, 8

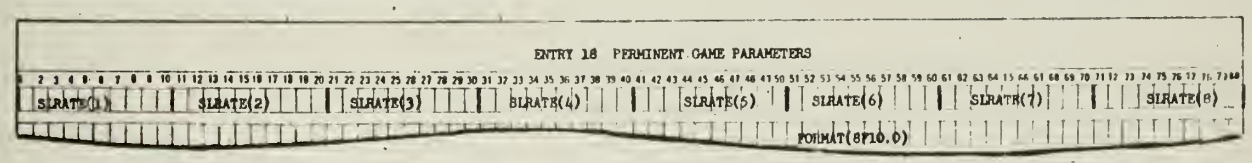
DECIMAL PERCENTAGE TAX RATES APPLICABLE TO EACH OF THE TAX BRACKETS



SEBRAC(I)
I = 1, 7

DOLLAR VALUES DEFINING THE INTERMEDIATE BRACKETS FOR THE DETERMINATION OF THE CHARGE FOR PROCESSING STOCK TRANSACTIONS (THE EXTREME VALUES OF 0. AND ARE SET IN THE CONTROL PROGRAM)

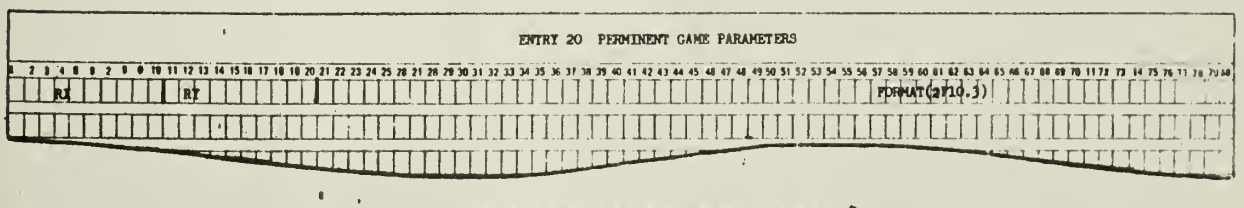




BIRATE(I)
I = 1, 8

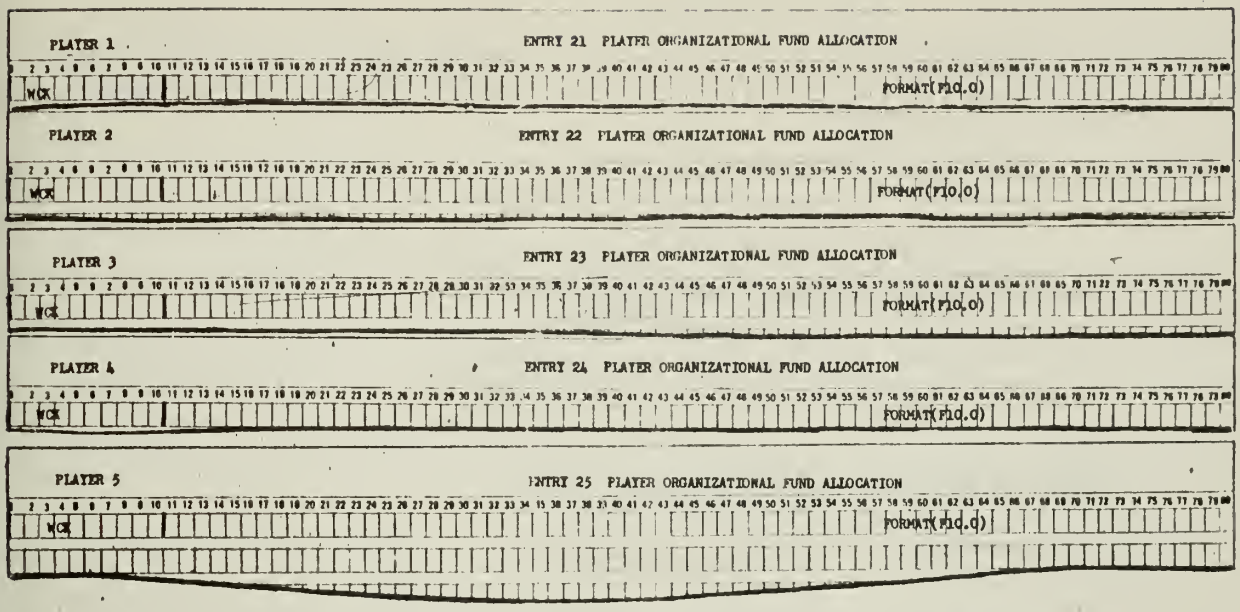
SLRATE(I)
I = 1, 8

DECIMAL PERCENTAGES THAT WHEN APPLIED TO A STOCK TRANSACTION DETERMINES THE CHARGE FOR PROCESSING THE TRANSACTION BIRATE IS PERTINENT TO STOCK PURCHASES AND SLRATE TO STOCK SALES



RX — MULTIPLIER USED FOR RANDOM NUMBER GENERATION

RY — MULTIPLICAND USED FOR RANDOM NUMBER GENERATION



WCK INITIAL FUND ALLOCATION MADE TO A PARTICIPANT AT THE COMMENCEMENT OF PLAY

NOTE: THE NUMBER OF ENTRIES WILL EQUAL THE VALUE ASSIGNED NPLAY. EACH ENTRY IS MADE ON A SEPARATE DATA CARD WITH A DECIMAL INDICATED AFTER THE LAST DIGIT.

PLAY INPUT

ENTRY 1 ADMINISTRATOR'S CONTROL DATA

NPLAY	I1	LENGTH	PERIOD	ADATA	FORMAT(I5, I2, I5, 2F5.0)

NPLAY — NUMBER OF PARTICIPATING COMPANIES

ENTRY: FROM 1 TO 5 - RIGHT HAND JUSTIFIED WITHOUT A DECIMAL INDICATED

I1 — MAGNETIC TAPE DRIVE UNIT TO BE USED FOR THE RETENTION OF NEW AND MODIFIED PRODUCTION DATA

ENTRY: NUMERIC DRIVE DESIGNATION - ENTRY IS RIGHT HAND JUSTIFIED WITHOUT A DECIMAL INDICATED

PERIOD — SEQUENTIAL PERIOD DESIGNATOR

ENTRY: COMMENCE WITH 1 FOR THE FIRST PERIOD AFTER THE PRE-PLAY PERIOD AND INCREMENTING BY 1 FOR EACH SUCCEEDING PERIOD. ENTRY IS PUNCHED ANYWHERE IN ITS FIELD WITH A DICIMAL INDICATED AFTER THE LAST DIGIT.

ADATA — DATA CONTROL INDICATOR SIGNIFYING IF CHANGES TO THE CHANGABLE GAME PARA-ARE INCLUDED IN THE PERIOD'S INPUT

ENTRY: ENTERED ANYWHERE IN ITS FIELD WITH A DECIMAL INDICATED AFTER THE LAST DIGIT

0. SIGNIFIES NO CHANGE IN THE CHANGABLE PARAMETERS

1. SIGNIFIES THAT CHANGES TO THE CHANGABLE PARAMETERS ARE INCLUDED IN THE PERIOD INPUT

ENTRY 1A CHANGABLE GAME PARAMETERS

SEE ENTRIES 4 - 6 OF THE PRE-PLAY INPUT FOR ENTRY DESCRIPTIONS AND INSTRUCTIONS

NOTE: IF ADATA IS INDICATED AS 0. DO NOT INCLUDE CHANGABLE PARAMETER ENTRIES IN THE PERIOD INPUT; HOWEVER IF 1. IS INDICATED CHANGE ENTRIES MUST BE INCLUDED

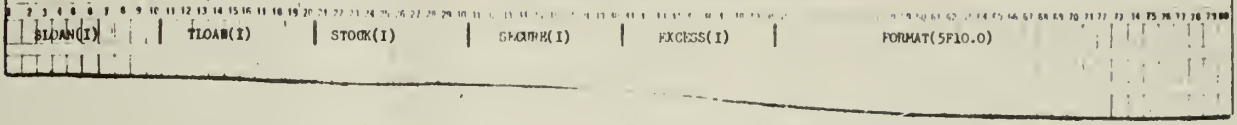
ENTRY 2 PLAYER IDENTIFICATION

IDENT	FORMAT(I5)

IDENT — PLAYER DESIGNATION PRECEEDING A RESPECTIVE PARTICIPANT'S INPUT

ENTRY: RIGHT HAND JUSTIFIED WITHOUT A DECIMAL INDICATED

ENTRY 3 PLAYER FINANCIAL DECISIONS



SLOAN(I) SHORT TERM LOAN REQUEST FOR LOAN INCURRANCE OR REPAYMENT OF A PLAYER

TLOAN(I) LONG TERM LOAN REQUEST FOR LOAN INCURRANCE OR REPAYMENT OF A PLAYER

STOCK(I) STOCK SALE OR PURCHASE REQUEST OF A PLAYER

SECURE(I) REQUEST FOR PURCHASE OR SALE OF SHORT TERM SECURITIES OF A PLAYER

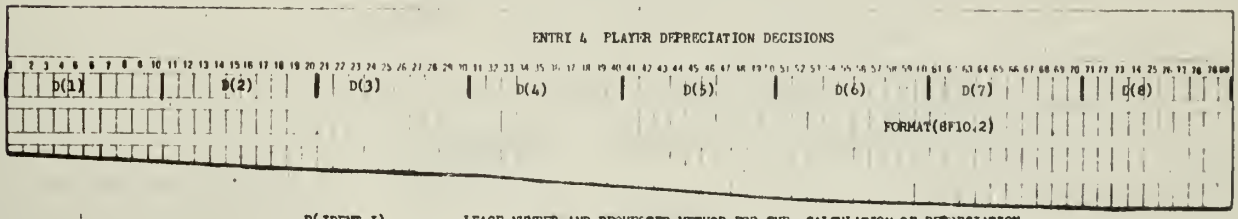
EXCESS(I) EXCESS EQUIPMENT SALE REQUEST OF A PLAYER

ENTRY: EACH OF THE VALUES ARE PUNCHED ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS INDICATED

INFORMATION:

VARIABLE	SIGN SIGNIFIED +	-
SLOAN(I)	INCURRANCE	REPAYMENT
TLOAN(I)	INCURRANCE	REPAYMENT
STOCK(I)	SALE	PURCHASE
SECURE(I)	PURCHASE	SALE
EXCESS(I)	SALE	SALE

ENTRY 4 PLAYER DEPRECIATION DECISIONS



D(IDENT,I) LEASE NUMBER AND REQUESTED METHOD FOR THE CALCULATION OF DEPRECIATION
I = 1, 8

ENTRY: ANYWHERE IN AN ENTRY'S RESPECTIVE FIELD WITH A DECIMAL APPROPRIATELY INDICATED

CONSTRUCTION: DEPRECIATION CHANGE REQUESTS ARE CONSTRUCTED AS:

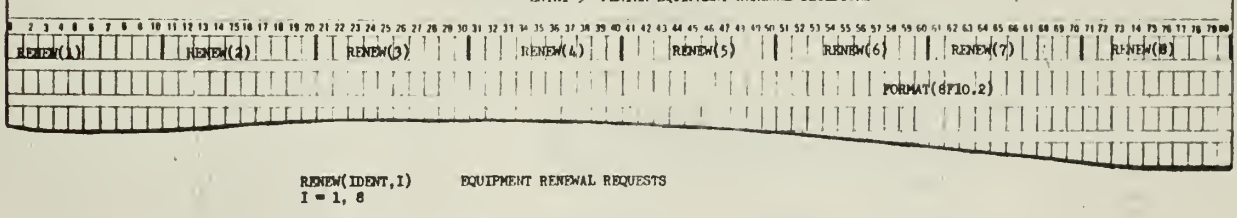
LEASE NUMBER + (DEPRECIATION METHOD DESIRED / 10.)

WHERE:

1. SIGNIFIES STRAIGHT-LINE DEPRECIATION
2. SIGNIFIES DOUBLE DECLINING BALANCE DEPRECIATION
3. SIGNIFIES SUM-OF-THE-YEARS DEPRECIATION

RESTRICTION: PLAYERS ARE RESTRICTED TO A MAXIMUM OF 8 REQUEST FOR CHANGES IN THE METHOD SPECIFIED FOR THE CALCULATION OF DEPRECIATION DURING A SINGLE PLAY PERIOD. A PARTICIPANT'S REQUESTS WILL BE INDICATED ON A SINGLE DATA CARD.

ENTRY 5 PLAYER EQUIPMENT RENEWAL DECISIONS



RENEW(IDENT,I) EQUIPMENT RENEWAL REQUESTS
I = 1, 8

ENTRY: SPECIFIC REQUESTS CAN BE ENTERED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

CONSTRUCTION: RENEWAL REQUESTS WILL BE CONSTRUCTED AS FOLLOWS:

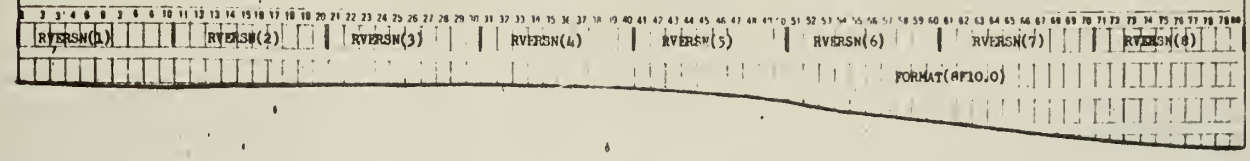
LEASE NUMBER + (TYPE OF EQUIPMENT TO BE RENEWED / 10.)

WHERE:

1. SIGNIFIES ORIGINAL PRODUCTION EQUIPMENT ASSIGNED A LEASE
2. AUXILLARY EQUIPMENT ASSIGNED A LEASE
3. BOTH ORIGINAL PRODUCTION EQUIPMENT AND AUXILLARY EQUIPMENT ASSIGNED A LEASE

RESTRICTION: PLAYERS ARE RESTRICTED TO 8 EQUIPMENT RENEWAL REQUESTS PER PERIOD WITH ALL REQUESTS PERTINENT TO A PARTICULAR PLAYER ENTERED ON A SINGLE DATA CARD

ENTRY 6 PLAYER LEASE REVERSION DECISIONS

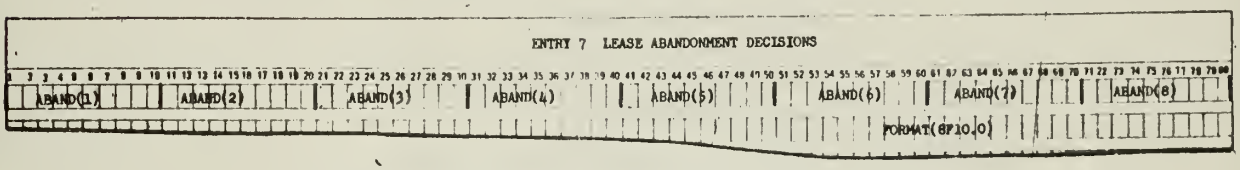


RVERSN(IDENT,I) NUMERICAL DESIGNATION OF LEASES OWNED BY A PLAYER AND DESIRED TO BE REVERTED

ENTRY: ENTRIES CAN BE PUNCHED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

RESTRICTION: A PLAYER IS RESTRICTED TO 8 REVERSION REQUESTS PER PERIOD ENTERED ON A SINGLE DATA CARD. ONLY UNDEVELOPED LEASES CAN BE REVERTED.

ENTRY 7 LEASE ABANDONMENT DECISIONS

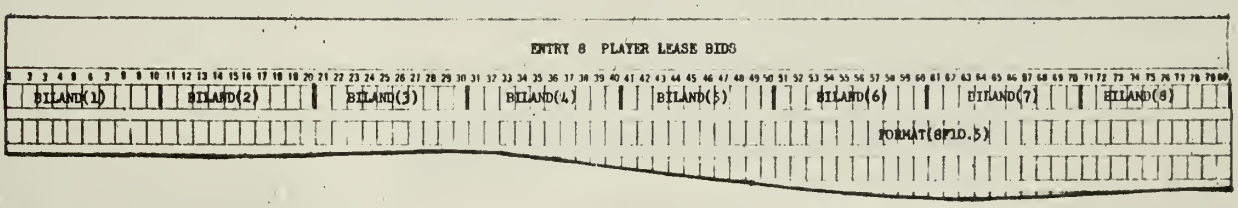


ABAND(IDENT,I) LEASE NUMBERS OF PRODUCING LEASES DESIRED TO BE ABANDONED
I = 1, 8

ENTRY: ENTRIES MADE ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

NOTE: ATTEMPTS TO REVERT A PRODUCING LEASE WILL BE HANDLED AS A LEASE ABANDONMENT BY THE CONTROL PROGRAM

ENTRY 8 PLAYER LEASE BIDS



BILAND(IDENT,I) DELAY RENTAL BIDS FOR LEASES DESIRED TO BE PURCHASED BY A PARTICIPANT
I = 1, 8

ENTRY: ENTRIES CAN BE MADE ANYWHERE IN THEIR APPROPRIATE FIELDS WITH DECIMALS INDICATED

CONSTRUCTION: ENTRIES FOR LEASE PURCHASES WILL BE CONSTRUCTED AS FOLLOWS:

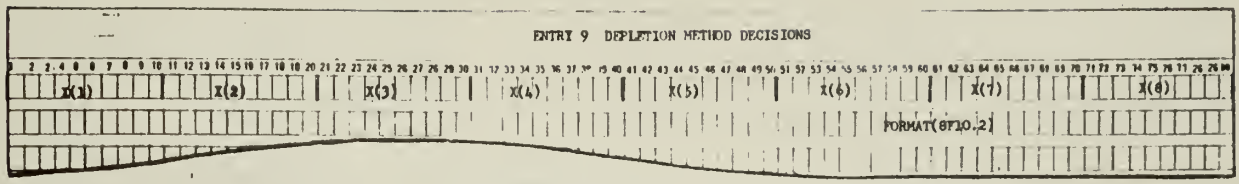
LEASE NUMBER + (ANNUAL PER ACRE DELAY RENTAL BID / 1000.)

RESTRICTION: THE NUMBER OF LEASE BIDS THAT CAN BE SUBMITTED BY A PARTICIPANT DURING A PERIOD IS RESTRICTED TO THE VALUE ASSIGNED THE VARIABLE LANMAX AND THE MAXIMUM DELAY RENTAL BID CANNOT BE IN EXCESS OF $999.99 PER ACRE

ARRANGEMENT INSTRUCTIONS: ENTRIES 2 - 8 WILL BE SUBMITTED FOR EACH OF THE PARTICIPANTS. EACH SET OF DECISIONS WILL BE ARRANGED IN THE ORDER OF THE INPUT DESCRIPTION PRESENTATION WITH ENTRIES PERTINENT TO RESPECTIVE PLAYERS ARRANGED ONE BEHIND THE OTHER. AS THE PLAYER IDENTIFICATION CARD INDICATES TO WHOM THE DECISIONS ARE PERTINENT ENTRY IN PLAYER ORDER IS NOT REQUIRED.

IN THE PREPARATION OF THE PLAYER'S INPUT SHOULD NO ENTRIES BE REGISTERED IN ANY OF THE DECISIONAL AREAS ENTRY CARDS MUST BE INCLUDED EVENTHOUGH THE DATA CARDS ARE BLANK SIGNIFYING NO DECISIONS.

ADMINISTRATOR'S PLAY INPUT



X(I)
I = 1, 8 — PRODUCING LEASE NUMBER AND ITS DESIGNATED DEPLETIDN METHOD (THESE DESIGNATIONS ARE COLLECTED FROM THE PARTICIPANTS AND COMPILED BY THE ADMINISTRATOR)

ENTRY: ENTRIES ARE MADE ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

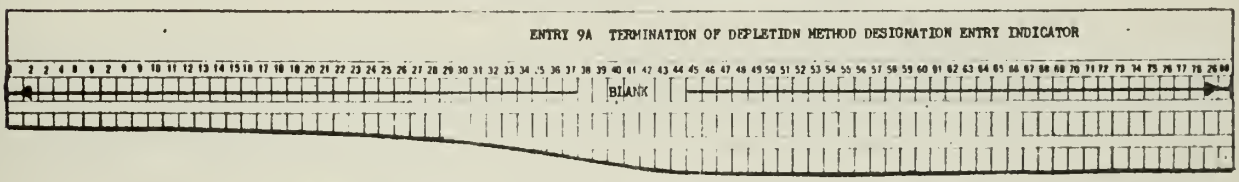
CONSTRUCTION: DEPLETIDN ENTRIES ARE CONSTRUCTED AS FOLLOWS:

LEASE NUMBER + (DEPLETION METHOD DESIONATIDN / 10.)

WHERE:

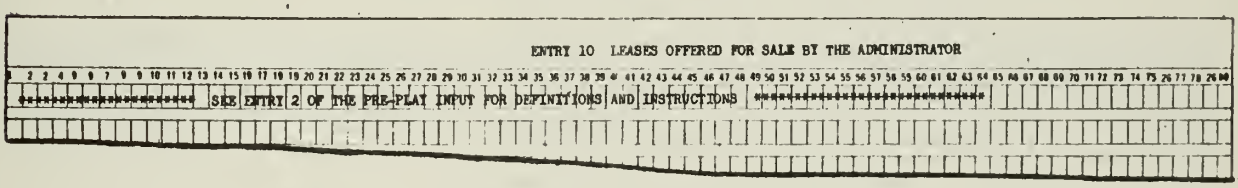
1. SIGNIFIES COST DEPLETION
2. SIGNIFIES PERCENTAGE DEPLETION

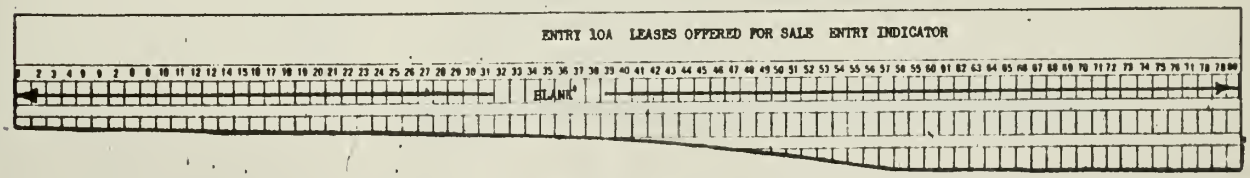
NOTE: AS MANY INPUT CARDS AS ARE NEEDED CAN BE INCLUDED IN THE INPUT, BUT SUCCESSIVE FIELDS MUST BE FILLED UNTIL THE ENTRY IS COMPLETE.



INSERTED AS A BACK-UP TO THE DEPLETION METHOD ENTRIES TO SIGNIFY COMPLETION OF THE INPUT

NOTE: IF NO DESIGNATIONS ARE TO BE MADE ONLY THIS ENTRY IS INCLUDED AND ENTRY 9 IS OMITTED. SHOULD A PRODUCING LEASE NOT HAVE A METHOD FOR THE CALCULATION OF DEPLETION SPECIFIED, DEPLETIDN WILL AUTOMATICALLY BE COMPUTED AS COST DEPLETION.


ENTRY 10 LEASES OFFERED FOR SALE BY THE ADMINISTRATOR
SEE ENTRY 2 OF THE PRE-PLAY INPUT FOR DEFINITIONS AND INSTRUCTIONS



BLANK DATA CARD INSERTED TO INDICATE THE COMPLETION OF THE LEASES OFFERED FOR SALE INPUT.

NOTE: IF NO LEASES ARE OFFERED FOR SALE DURING A PERIOD ENTRY 10 IS OMITTED AND ENTRY 10A IS INCLUDED IN THE INPUT

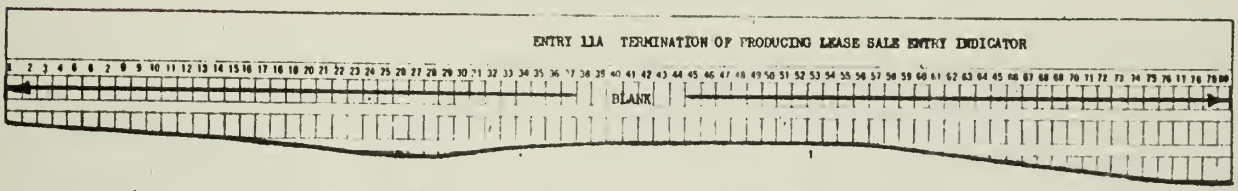
ENTRY 11 PRODUCING LEASES SOLD BY THE ADMINISTRATOR OR FROM ONE PLAYER TO ANOTHER

WCK	LEASE NUMBER
BONUS	SELLING PRICE OF A LEASE
SUFF1	LEASE BUYER
SUFF2	LEASE SELLER
WELLS	NUMBER OF PRODUCING WELLS ON A LEASE
TANGE	UNEXPENSED TANGIBLE ASSETS ASSIGNED THE LEASE
NTANGE	UNEXPENSED INTANGIBLE ASSETS ASSIGNED A LEASE

ENTRY: ENTRIES CAN BE MADE ANYWHERE IN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED

NOTE: AS MANY OF THESE INPUTS CAN BE INCLUDED IN A PERIOD AS DESIRED; HOWEVER, EACH MUST BE MADE ON A SEPARATE DATA CARD. PRODUCTION DATA PERTINENT TO A LEASE THAT IS SOLD MUST EITHER ALREADY BE INCLUDED IN THE CARRY-OVER DECK OR INPUT AS NEW PRODUCTION DATA FOR THE PERIOD IN WHICH THE SALE WAS CONSUMATED.

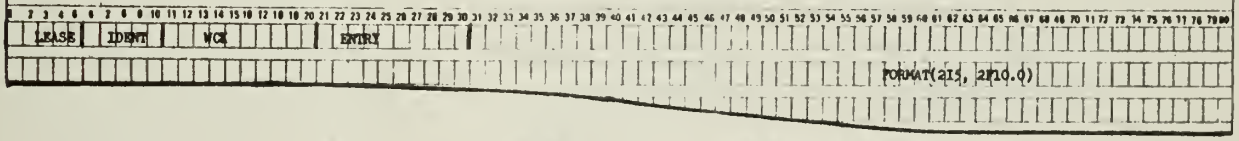
ENTRY 11A TERMINATION OF PRODUCING LEASE SALE ENTRY INDICATOR



SIGNIFIES COMPLETION OF THE ENTRY OF LEASE SALE TRANSACTIONS

NOTE: IF NO PRODUCING LEASE SALES ARE REGISTERED FOR ANY PARTICULAR PERIOD ENTRY 11 IS OMITTED AND ONLY ENTRY 11A IS INCLUDED IN THE INPUT DATA.

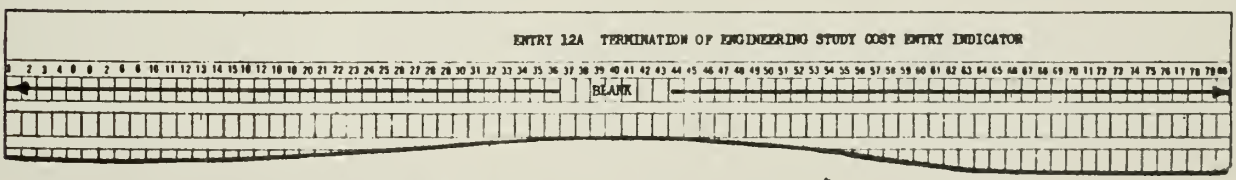
ENTRY 12 ADMINISTRATOR'S ENTRY OF ENGINEERING STUDY COSTS



LEASE	LEASE NUMBER ON WHICH THE ENGINEERING STUDY WAS PERFORMED
IDENT	PLAYER REQUESTING THE PERFORMANCE OF AN ENGINEERING STUDY
WCK	NUMERICAL DESIGNATION OF THE STUDY PERFORMED
ENTRY	CHARGE FOR THE ENGINEERING STUDY

ENTRY: LEASE AND IDENT ARE RIGHT HAND JUSTIFIED WITHIN THEIR RESPECTIVE FIELDS WITHOUT DECIMALS. WCK AND ENTRY ARE PUNCHED ANYWHERE WITHIN THEIR FIELDS WITH DECIMALS APPROPRIATELY INDICATED.

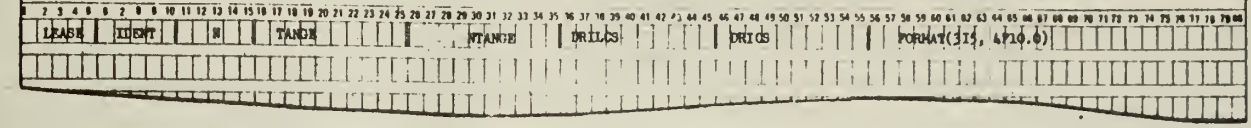
ENTRY 12A TERMINATION OF ENGINEERING STUDY COST ENTRY INDICATOR



INCLUDED TO INDICATE COMPLETION OF THE ENGINEERING STUDY INPUTS

NOTE: IF NO ENGINEERING STUDIES ARE INCLUDED IN A PERIOD, ENTRY 12 IS OMITTED AND ONLY ENTRY 12A IS INCLUDED IN THE INPUT.

ENTRY 13 PRODUCTION PARAMETERS FOR NEW AND MODIFIED PRODUCTION ENTRIES

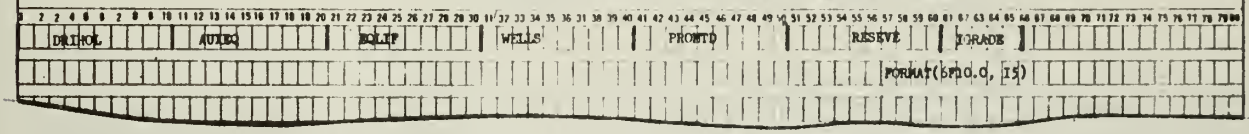


LEASE	LEASE NUMBER
IDENT	LEASE OWNER
N	NUMBER OF PRODUCTION INCREMENTS INCLUDED IN THE INPUT
TANGE	VALUE OF PRODUCTION EQUIPMENT PLACED ON A LEASE FOR LEASE DEVELOPMENT
NTANGE	VALUE OF INTANGIBLE ASSETS ASSIGNED A LEASE
DRILCS	TOTAL COST OF LEASE DEVELOPMENT INCLUDING DRILLING AND EQUIPMENT
DRICS	COST OF DRILLING NON-PRODUCING WELLS

ENTRY: LEASE, IDENT, AND N ARE RIGHT HAND JUSTIFIED WITHIN THEIR RESPECTIVE FIELDS WITHOUT INDICATION OF A DECIMAL. TANGE, NTANGE, DRILCS, AND DRICS CAN BE PUNCHED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED.

NOTE: FOR THE ENTRY OF MODIFIED PRODUCTION DATA DUE TO A CHANGE IN THE LEASE'S METHOD OF PRODUCTION, CAPTIONS INCLUDED ON ENTRIES 13 AND 14 THAT ARE NOT REQUIRED SHOULD BE LEFT BLANK AND VALUES ALREADY RECORDED IN THE CARRY-OVER DECK WILL REMAIN EFFECTIVE.

ENTRY 14 CONTINUATION OF ENTRY OF PRODUCTION PARAMETERS



DRIHOL	NUMBER OF NON-PRODUCING WELLS DRILLED DURING DEVELOPMENT
AUXEQ	COST OF AUXILLARY EQUIPMENT REQUIRED FOR A PRODUCTION METHOD CHANGE
EQLIF	LIFE OF EQUIPMENT INCLUDED IN THE INPUT
WELLS	NUMBER OF PRODUCTIVE WELLS DRILLED
PROMTD	NUMERICAL DESIGNATION OF THE PRODUCTION METHOD USED ON A LEASE
RESEVE	RECOVERABLE RESERVE OF GAS OR OIL ON A LEASE EXPRESSED IN MCF FOR GAS WELLS AND BARRELS OF OIL FOR OIL WELLS
IGRADE	GRADE OF PETROLEUM PRODUCTION THAT IS USED AS AN INDEX IN THE DETERMINATION OF THE SELLING PRICE OF THE PRODUCTION (IGRADE CAN BE ASSIGNED VALUES OF FROM 1 TO 5 AND THE SELLING PRICE OF PRODUCTION DEFINED BY GPRICE(IGRADE) OR OPRICE(IGRADE))

ENTRY: ALL VALUES EXCEPT IGRADE CAN BE ENTERED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED. IGRADE MUST BE RIGHT HAND JUSTIFIED IN ITS FIELD WITHOUT THE INDICATION OF A DECIMAL.

INSTRUCTION: EITHER ORIGINAL PRODUCTION EQUIPMENT OR AUXILLARY EQUIPMENT CAN BE ASSIGNED IN AN INPUT BUT NOT BOTH. EQLIF WILL BE PERTINENT TO THE TYPE OR EQUIPMENT INCLUDED IN THE INPUT.

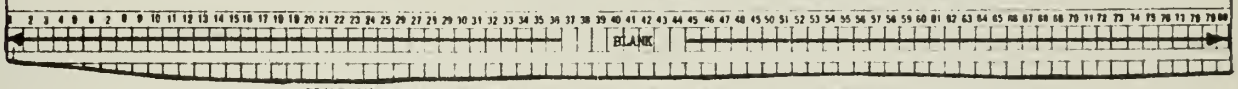
ENTRY 15 INCREMENTAL PRODUCTION DATA

PROD	PRODUCTION RATE FOR AN INCREMENTAL PRODUCTION PERIOD EXPRESSED AS MCF OF GAS PER DAY FOR GAS WELLS OR BARRELS OF OIL PER DAY FOR OIL WELLS
TIME	TIME DURATION OF A PRODUCTION PERIOD EXPRESSED IN DAYS
GOR	GAS-OIL RATIO APPLICABLE TO OIL PRODUCTION HAVING SOLUTION GAS INCLUDED IN THE OIL. THIS VALUE IS EXPRESSED IN MCF PER BARREL OF OIL.
PRES	AVERAGE WELL HEAD PRESSURE DURING A PRODUCTION INCREMENT

ENTRY: ALL VALUES CAN BE ENTERED ANYWHERE WITHIN THEIR RESPECTIVE FIELDS WITH DECIMALS APPROPRIATELY INDICATED.

NOTE: GOR IS APPLICABLE TO OIL WELL PRODUCTION, FOR ENTRY OF GAS WELL PRODUCTION DATA, GOR IS LEFT BLANK OR A ZERO VALUE INDICATED.

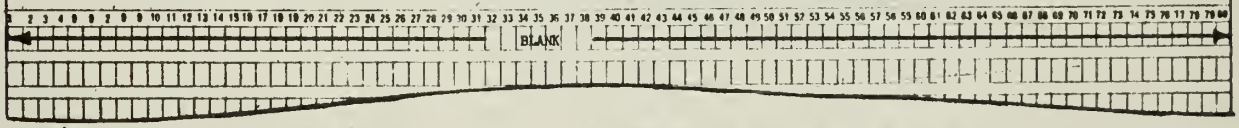
ENTRY 15A END OF INDIVIDUAL LEASE PRODUCTION DATA INDICATOR



BLANK CARD SIGNIFYING COMPLETION OF THE ENTRY OF PRODUCTION DATA PERTINENT TO A SPECIFIC LEASE

NOTE: PRODUCTION ENTRIES ARE NOT LIMITED, BUT EACH MUST END WITH A BLANK DATA CARD, ENTRY 15A.

ENTRY 15B END OF NEW AND MODIFIED PRODUCTION DATA INPUT



BLANK DATA CARD SIGNIFYING THE END OF THE NEW AND / OR MODIFIED PRODUCTION DATA INPUT

NOTE: SHOULD AN INPUT OF NEW OR MODIFIED PRODUCTION NOT EXIST DURING ANY PERIOD ENTRIES 13, 14, AND 15 ARE OMITTED AND ONLY ENTRIES 15A AND 15B ARE INCLUDED IN THE ADMINISTRATOR'S INPUT.

APPENDIX C

FACIMILES OF REPORTS GENERATED BY THE CONTROL PROGRAM

APPENDIX C

FACIMILES OF REPORTS GENERATED BY THE CONTROL PROGRAM

REPORT OF PRODUCING LEASES SOLD

PERIOD NUMBER 3

LEASE NUMBER	BUYER	SELLER	SALE PRICE	NUMBER OF WELLS
5	4	3	$75,000.	12

REPORT OF ENGINEERING STUDIES PERFORMED

PERIOD NUMBER 3

LEASE NUMBER	PLAYER REQUESTING STUDY	STUDY DESIGNATION	COST OF STUDY
73	4	9	$27,000.

PLAYER DRILLING RESUME

PLAYER 3

PERIOD NUMBER 3

PRODUCING WELLS DRILLED	DRY HOLES DRILLED	COST OF DRILLING DRY HOLES	TOTAL DRILLING COSTS	TOTAL INTANGIBLE ASSETS
10	2	$20,000.	$250,000.	$8,000.

ABANDONMENT PENALTY REPORT

PERIOD NUMBER 3

LEASE NUMBER	PLAYER REQUESTING ABANDONMENT	LEASE OWNER	PENALTY CHARGE
16	5	2	$7,500.

LEASE SALE REPORT

PERIOD NUMBER 3

LEASE NUMBER	DELAY RENTAL	PURCHASE BONUS	LEASE ACREAGE
64	$3.	$3,000.	500

LEASE DELAY RENTAL AND TERMINATION REPORT

PERIOD NUMBER 3

LEASE NUMBER	LEASE OWNER	DELAY RENTAL CHARGE
16	2	$2,700.

LEASE 27 OWNED BY PLAYER NUMBER 1 REVERTED TO GAME DUE TO EXPIRATION OF PRIMARY TERM

LEASE SALE REPORT

PERIOD NUMBER 3

LEASE NUMBER	ACREAGE	ANNUAL PER ACRE DELAY RENTAL
67	475	$2.
68	580	$3.
69	760	$2.

LEASE PRODUCTION REPORT

LEASE NUMBER 13

OWNER 3

PERIOD NUMBER 3

GROSS REVENUE FROM PRODUCTION		$ 100,000.	
SEVERENCE TAX	$ 3,000.		
PRODUCTION COST	7,000.		
EXTRA MAINTENANCE CHARGES	0.		
DRILLING EXPENSE	0.		
DEPLETION ALLOWANCE	27,500.		
DEPRECIATION	5,000.		
TAXABLE INCOME		57,500.	
INCOME FROM PRODUCTION BEFORE INCOME TAX			$ 90,000.

ASSET RESUME

BOOK VALUE OF EQUIPMENT	$ 87,000.
NON-EXPENSED INTANGIBLES	12,000.
TOTAL ASSETS	$ 99,000.

DEPRECIATION PENALTY REPORT

PERIOD NUMBER 3

PLAYER	LEASE NUMBER	PENALTY
1	37	$ 1,000.

PLAYER FINANCIAL STATEMENT

PLAYER 5

PERIOD NUMBER 3

INTEREST CHARGES	$ 2,000.
DIVIDEND PAYMENT	0.
SHARES OF STOCK PURCHASED/SOLD	0.
NUMBER OF SHARES OF STOCK OUTSTANDING	100,000
DIVIDENDS FROM SHORT TERM SECURITIES	1,000.
CAPITAL GAINS TAX PAID	0.

BALANCE SHEET

CASH	$ 250,000.	
SHORT TERM SECURITIES	30,000.	
EXCESS EQUIPMENT	0.	
INTANGIBLE ASSETS	400,000.	
TANGIBLE ASSETS	12,600,000.	
TOTAL ASSETS		$ 13,280,000.
LOANS OUTSTANDING		
SHORT TERM	800,000.	
LONG TERM	1,200,000.	
EMERGENCY	0.	
CORPORATE STOCK	3,000,000.	
CAPITAL SURPLUS	2,000,000.	
RETAINED EARNINGS	6,280,000.	
TOTAL LIABILITIES		$ 13,280,000.

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